NATUR CYMRU
Nature of Wales

Number/Rhif 46 • Spring/Gwanwyn 2013

- National Trust theme
- Day-flying moths
- Planhigion Meddyginiaethol
- Barcoding the flora
- Dyfi valley dormice
- Books, news, comment

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GOLYGYDDOL EDITORIAL

Gwaith yr Ymddiriedolaeth Genedlaethol – sefydliad sydd â'i Ddeddf Seneddol ei hun – yw testun rhan helaeth o'r rhifyn hwn: elusen sydd hefyd yn sefydliad cenedlaethol. Dengys yr erthyglau hyn i ba raddau y mae'r Ymddiriedolaeth Genedlaethol yng Nghymru yn glynu at ei phwrpas sylfaenol, sef gwarchod tir o harddwch naturiol, ei nodweddion, ei blanhigion a'i anifeiliaid. Yr hyn sy'n creu argraff arnaf yw'r brwdfrydedd sydd gan yr awduron tuag at eu gwaith a'u gwerthfawrogiad o'r safleoedd ysblennydd y mae'r Ymddiriedolaeth Genedlaethol yn eu gwarchod ar ein rhan.

Trwy ddefnyddio DNA planhigion mae'r Ardd Fotaneg Genedlaethol wedi arwain gwaith arloesol i lunio 'cod bar' ar gyfer planhigion Cymru. Yn ôl un o benseiri'r prosiect, gall fod o fudd i iechyd pobl yn ogystal ag i iechyd yr amgylchedd, ac mae ganddo bosibiliadau cyffrous eraill hefyd. Dengys pa mor werthfawr yw ymchwil amgylcheddol a phwysigrwydd ein sefydliadau. Mae Cymru'n lwcus o fod ag amgylchedd naturiol ysblennydd sy'n sail i'n heconomi a'n hunaniaeth, a dylem ymfalchïo pan fydd sefydliad cenedlaethol yn anelu at yr uchelfannau yn y fath fodd.

Erbyn hyn mae corff amgylcheddol cenedlaethol newydd, Cyfoeth Naturiol Cymru, yn esgyn o farwydos Comisiwn Coedwigaeth Cymru, Asiantaeth yr Amgylchedd Cymru a Chyngor Cefn Gwlad Cymru.

Mike Alexander

Llyndy Isaf, Snowdonia

A fydd hwn yn anelu at yr uchelfannau tybed? Yn sicr, mae'n wynebu sialensiau mewnol sylweddol, e.e. sut i hyrwyddo pob rhan o'i gylch gwaith amrywiol heb orfod cyfaddawdu neu wanhau. Ond mae'r sialensiau allanol sy'n wynebu pob un ohonom yn fwy fyth.

Rydym ymhell o gyflawni'r hyn y mae'r ymadrodd 'datblygu cynaliadwy' yn ei awgrymu: creu cymdeithas lle ceir cydbwysedd rhwng yr economi ac ecoleg, lle na chaiff systemau cynnal bywyd eu rhoi yn y fantol a lle caiff amrywiaeth biolegol ei gynnal. Mae tasg enfawr yn wynebu Cyfoeth Naturiol Cymru ac mae'n haeddu gwynt ffafriol yn ei hwyliau. Amser yn unig a ddengys a fydd creu'r corff yn gam enfawr ymlaen ynteu'n gyfle i leihau costau, i greu ymraniadau mewnol ac i gyfaddawdu. Dylem wneud popeth o fewn ein gallu i sicrhau ei lwyddiant a, lle bo angen, dylem sicrhau ei fod yn cwrdd â'r gofynion.

James Robertson

Alan Kearsley-Evans

Much of this issue covers the work of the National Trust, an organisation with its own Acts of Parliament: a charity which is also a national institution. These articles demonstrate how well the National Trust in Wales is living up to a founding purpose of preserving land of natural beauty, its features, and plants and animals. What comes across to me is the enthusiasm that the authors have for the work they do, and their appreciation of the fabulous sites that the National Trust looks after for us.

The National Botanic Garden has led pioneering work, using plant DNA to 'barcode' the Welsh flora. As one of its architects reports, this work could bring benefits for human as well as environmental health and other exciting possibilities. It demonstrates the value of environmental research and the importance of our institutions. Wales is blessed with a stunning natural environment, which underpins our economy and identity, and we can be justly proud when a national institution punches above its weight like this.

We have a new national environmental body, Natural Resources Wales (NRW), emerging from the embers of the Forestry Commission Wales, Environment Agency Wales and the Country Council for Wales. Will this punch above its weight? It certainly faces considerable internal challenges, such as how to champion all parts of its varied remit without succumbing to compromise and dilution. But the external challenges facing us all are even greater.

We are a long way from achieving what the phrase 'sustainable development' implies; building a society in which economy and ecology are in balance, where life-support systems are not compromised and biological diversity is maintained. NRW has a huge job to do, and deserves a fair wind. Only time will tell whether its creation is a major step forward or turns out to be an opportunity for cost cutting, internal division and compromise. We should do what we can to see that it is a success, and where necessary, we should keep it up to the mark.

James Robertson

The National Trust in Wales

Mike Alexander

Llyn Dinas, Snowdonia

Yma mae HELEN BUCKINGHAM a DAVID BULLOCK yn cyflwyno gwaith yr Ymddiriedolaeth Genedlaethol, sef sefydliad y sonnir amdano mewn cyfres o erthyglau sy'n dilyn.

HELEN BUCKINGHAM and DAVID BULLOCK introduce the work of the National Trust, which features in a series of articles which follow.

After years of working for the National Trust in Wales we are still awestruck by the richness and the beauty of the places in our care. In a land-holding of well over 50,000 ha, with more than one-fifth of Wales's amazing coastline, more than half is designated for its high nature value as SSSIs. And let's not forget the thousands of built structures and water bodies on land we care for, many of which are breeding sites for bats and great crested newt species respectively. We have an awful lot of nature to look after and to share with others.

For its size, the geological map of Wales is among the most colourful on the planet. The diversity of land forms, land use and habitats that this generates is made more dramatic because it is often fine grained. There are few other places in the UK where, within a few kilometres, you can marvel on the coast at 'Mediterranean' plants such as the spotted rockrose, be surrounded (and probably soaked) by the dripping greenery of temperate rain forest, and then take in the cold of the arctic/alpine vegetation on the mountain tops.

There is substantial National Trust ownership in all these landscapes.

Protection of animals, plants, landscapes and buildings for the benefit of the nation is enshrined in our 1907 Act and typically, once acquired, we adopt a legal right to own the land forever. These are powerful attributes of a landowning organisation.

Yet some of the most significant challenges we face are precisely because we are large landowners. Many of the coastlines in our care are very dynamic and, like our uplands, they will change because of global warming.

But there are benefits as well. We are able to achieve a lot because of the scale at which we can work and there are certainly places and actions that we can be proud of, much of which involves manipulating grazing pressure by livestock, and working closely with our tenants and graziers. Here are some examples:

Over the past decade, in Cwm Idwal NNR (*Natur Cymru* 29, pp20-26) we have kept the grazing pressure low enough for the heathland vegetation to start to recover, and the special plant communities on the ledges and in crevices are flourishing – this requires exclusion of most sheep and feral goats, forever.

Successful restoration of the wonderful Rhos Cwm Season in Ceredigion needed manual clearance and grazing by hardy Welsh Blacks. The declaration of Dinefwr Park as a NNR was the icing on the cake for this iconic place – where else in Wales can you find a grove of 700-year-old oaks?

Peatland conservation is of huge importance to us – we cherish the natural aspects of our blanket bogs and know how important they are as carbon stores and sinks. Blocking thousands of ditches in the vast peat bog of the Migneint and restoring blanket bog on Abergwesyn Common (*Natur Cymru* 40 pp34-38) have been major contributions to our work in the Welsh uplands. We are indebted to our partners in helping us to deliver so much, whether that's providing funding or expert input and advice. As major owners of so much land of high nature value, we receive (and are very grateful for) substantial grant aid and support from the Countryside Council for Wales (CCW), in part so that it can be enjoyed by the people of Wales.

Asiantaeth yr Amgylchedd Environment Agency
Comisiwn Coedwigaeth Forestry Commission
Cyfoeth Naturiol Cymru Natural Resources Wales
Cyngor Cefn Gwlad Cymru Countryside Council for Wales
Gwarchodfeydd Natur Cenedlaethol National Nature Reserve
SoDdGA SSSI
Ymddiriedolaeth Genedlaethol National Trust

Most of our land is in agricultural use and we must work with our tenants to uphold the nature value of the land they farm. Owning land forever means that we can think long term, building environmental change into our plans. So, as Mike Howe describes for our recently acquired farm of Llyndy Isaf (page 18), we need a sound management plan right now, and we need to future-proof it too, building resilience to whatever climate change will hurl at us. The same principle applies to the present and future coast of Wales – Richard Neale describes our strategy for living with inevitable but uncertain changes (page 6).

The lives and wellbeing of people are critical if we are to hold on to and enhance what is naturally good about our land. Robert Parkinson describes the HLF-funded partnership linking health, engagement and the wonderful landscape of the Llŷn, which is really starting to pay off (page 29).

We recognise that appreciation of nature is experiential and that children need the opportunities to have those 'epiphany' moments which many people know as the turning point to becoming lovers of nature. In his article, Saul Burton shows us how at Erddig he is using bushcraft skills to get kids outdoors and close to nature (page 11).

With the economic challenges, the focus on natural resources, and of course the amalgamation of CCW, Forestry Commission and Environment Agency into one body (the creation of Natural Resources Wales), it's going to be even more important for us to stay focussed on nature and sharing nature with people, and we want to do this forever.

Helen Buckingham *is the National Trust's Wildlife and Countryside Adviser for Wales:* ***David Bullock*** *is the National Trust's Head of Nature Conservation.*

Getting closer to nature *on the Welsh coast*

Marloes sands, Pembrokeshire

Ar ôl gyrfa yn rheoli tir ac eiddo, mae RICHARD NEALE bellach yn arwain prosiect i hyrwyddo cyfleoedd i gael pobl yn nes at natur ar hyd arfordir Cymru, er eu budd nhw a natur. Yma mae'n disgrifio ambell fan lle caiff y potensial hwn ei wireddu.

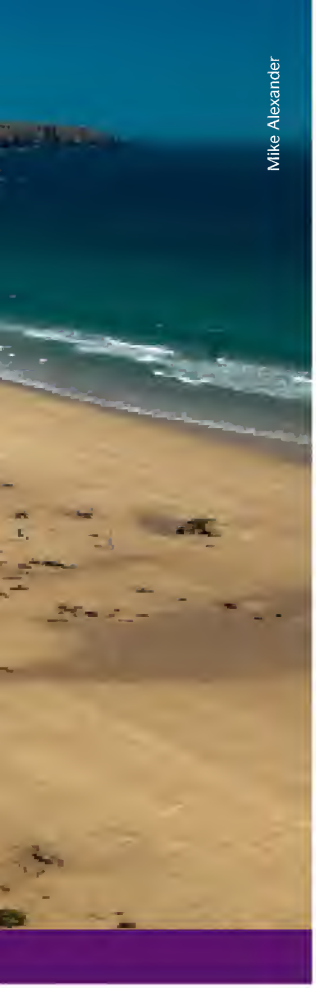
After a career managing land and property, RICHARD NEALE is now leading a project to promote opportunities to get people closer to nature along the Welsh coast, for the benefit of both. Here he describes some of the places where that potential is being realised.

Three years ago Fiona Reynolds, the then Director General of the National Trust, challenged us to do something about the misconception that we were all about country houses and gardens.

Her challenge set in train some initiatives that are now beginning to bear fruit. One of those has turned the spotlight onto the Welsh Coast, and its potential to inspire people through nature. This is the project I'm lucky enough to be leading, on a secondment after a couple of decades at the coalface of property management. At the end of my first year I've been reflecting on the huge potential of the Welsh coast for getting people closer to nature and more involved with conservation.

Root and branch shift

In Fiona's seminal *Vision for the Outdoors* she made this heartfelt call to action: "We want to get more people enjoying the outdoors and feeling closer to nature. We want to inspire them, through wonderful experiences, to care about special places as much as we do. We want them to connect with nature, to enrich their lives, and to leave more aware that we depend on nature as much as nature depends on us."



Mike Alexander

Alan Kearsley-Evans

Strip field farming on the Vile, Gower

But this was not a flavour-of-the-month campaign or marketing plan; it was nothing short of a root and branch shift in the way we work. At the 'root' part of this movement lies a series of organisational programmes that are guiding the changes. Most far-reaching is our wish to develop ways of making National Trust membership more relevant to people who prefer outdoor activities and would like to have access to more information about the countryside in our care.

Then there's our *Natural Childhood* campaign tackling what we call 'nature deficit disorder'; there's also our family-orientated *50 Things to do before you're 11¾* campaign and our annual Great Welsh Walk, which gains in popularity each year.

But the longer-term, 'branch' part of the movement is to unlock the potential of our countryside staff to bring places to life for visitors and communities. Websites, leaflets, signs and interpretation panels all have their place, but they pale into insignificance compared to the infinitely richer experience of meeting someone whose job it is to look after the place you're visiting.

These were some of the things I had in mind when I started my secondment back in March 2012. My top priorities were to get out onto the coast, get to know our properties beyond my home area of Snowdonia and Llŷn, and to explore with my coastal colleagues ideas for realising this dream.

The Vile Potential!

"If I leave Gower without having seen the restoration of the Vile, I will have failed". These were the rather startling words of Head Ranger Alan Kearsley-Evans when I met him recently. We were looking out over that remarkable survival from the Middle Ages, the arable field-system at Rhossili. Alan explained that the Vile (the name is derived from the old Gower dialect word for field) is a landscape of immense historical and archaeological significance, and has been described as the equivalent of a Grade 1 listed building.

The potential of the site (with the hope of abundant wildflowers and flocks of farmland birds) to engage visitors with nature was obvious, but what struck me was its potential to re-connect a local community with its own agricultural heritage. Four local farmers still plant up some of the strip fields with vegetables, but the site has been in decline for decades. We must do everything we can to empower Alan to realise his dream and ensure that the Vile receives the same care that we give to our Grade 1 listed buildings.

©Ymddiriedolaeth Genedlaethol/ National Trust

Orchids at Castlemartin Corse

Castlemartin Corse

Seventy miles to the west, as the car flies, is the surfing Mecca of Freshwater West in Pembrokeshire. I guess that few of the 'duck-diving dudes' riding the waves spare a thought for what lies behind the dunes. But a short walk during a lull in the waves would bring you to one of Wales's foremost wetland sites, Castlemartin Corse (*Natur Cymru* 45, pp18-23). This rather degraded SSSI forms part of the Trust-owned Gupton farm, which until recently was an intensive dairy farm.

Here, Operations Manager Rebecca Stock and her colleagues are developing plans for bird hides, trails and other facilities to help people of all ages – including surfers – get involved with what promises to be an exciting farmland habitat restoration project.

Marloes

Many readers of the excellent article on the Marloes Peninsula that appeared in Issue 38 of *Natur Cymru* would have been amazed that such a diversity of wildlife could be packed into such a small area of Pembrokeshire. A familiarisation visit with one of the authors of the article, Area Warden Andrew Tuddenham, really bought home to me the potential this site has to be a 'wildlife-wow' for all visitors – not just a few privileged cognoscenti – with the sensitive addition of a few facilities to help people get more from their visit.

Ceredigion Coast

One of the highlights of my first year in the role was being introduced to the wonders of the Ceredigion Coast by our Ranger, Gwen Potter. My appreciation of this enchanting area's wildlife went up leaps and bounds as we visited a succession of wonderfully undisturbed Trust-owned places, culminating with a sighting of dolphins near Craig yr Adar by Newquay. Inspired by our new outdoors agenda, Gwen and her loyal team of local volunteers are coming up with all sorts of wildlife engagement activities, many of them centred on Llanborth farm near Penbryn beach.

Heavenly Llŷn

Heading north, I'd like to share with you my biased opinion that heaven lies tucked down a grassy lane on the eastern slopes of Mynydd Rhiw on the Llŷn peninsula. This was my home in the early 1980s, when I was in the brave summer of my youth.

G Jenkins

Fron Deg

(I recounted the tale of my arrival here in *Natur Cymru* 20, pp 4-8). So it was an absolute delight to have the honour last year – as the last long-standing occupant of the cottage – to rekindle a fire in the grate to celebrate the completion of the restoration of Tan yr Ardd, my former home, and that of its nearby twin, Fron Deg.

But the completion of this Heritage Lottery Fund/Llŷn Landscape Partnership–funded project is just the start of something even more important. It will provide an opportunity for someone to live at Tan yr Ardd and to work with the community, educational groups and volunteers to restore the dozen or so acres of neglected heath pastures that used to make up this *tyddyn* smallholding. Fron Deg, across the field, will provide the cherry on the cake of this living-history project by being a sort of shrine to the *tyddynnwyr*: the men, women and children who laboured on these hillsides and created a patchwork landscape of extraordinary beauty and wildlife diversity.

To conclude this forward-looking tour of the Welsh coast's potential to engage people with nature, I'd like to take you to a place which may soon have the dubious distinction of being one of Europe's largest construction sites – the Wylfa B nuclear power station.

Cemlyn lagoon

Anyone who has bird-watched to a backdrop of steel works, blast furnaces or cooling towers will tell you that industry and wildlife are not always mutually exclusive. Nestling in paradoxical proximity to the proposed Wylfa B site is, of course, the Cemlyn lagoon, which is the location for one of Wales's most famous wildlife spectacles, the internationally important nesting tern colony – a summer home to thousands of common, arctic and Sandwich terns. Overlooking this remarkable site is our base at Hen Blas Cemlyn, where I enjoyed a mug of good coffee when I met our wardens, Bryn Jones and Gwynfor Owen, not long

©CCW/Michael Hammett

Sandwich tern

after the lagoon's feathered inhabitants had started their epic migrations to the southern hemisphere.

But it was not just the caffeine that set my pulse racing. It was the discussion on how we can build on the excellent partnership with the North Wales Wildlife Trust and adapt some of our buildings and trails to create yet more opportunities to get people involved.

Realising our dreams

As I reflected on all these opportunities, and a few others I have no space to describe, I returned to Fiona's vision and the distance we've travelled to begin to realise it. For the first time, I thought that we can be optimistic that our countryside is gradually emerging from the 'eclipse of the country house'. I thought too about the passion for nature that I have found in my colleagues. Such thoughts have spurred me on to use my lucky secondment to do what I can to support our coastal teams to turn these potential projects into reality.

***Richard Neale** is the National Trust's Coastal Engagement Project Manager for Wales.*

Ymweliad Partneriaeth Tirlun Llŷn â Fron Deg i ddathlu gorffen y gwaith o'i adfer

G Jenkins

Tân ar hen Aelwyd

Hawdd cynnau tân ar hen aelwyd, medden nhw. Wel, yn ddiweddar cefais y pleser o wneud hyn yn llythrennol. Perfformiais yr orchwyl symbolaidd yma fel rhan o ddathliadau i nodi gorffen y gwaith o adfer dau dyddyn traddodiadol ar lethrau Mynydd Rhiw yn Llŷn. Y rheswm pam mai fi gafodd yr anrhydedd o wneud hyn oedd mai fi oedd y person diwethaf i fyw yn un o'r bythynnod - Tan yr Ardd - bron i dri deg o flynyddoedd yn ôl.

Mewn tirwedd fel hon, mae'n amhosib gwerthfawrogi natur a bywyd gwyllt heb ddeall hefyd y ffordd o fyw sydd wedi creu'r trysorau hyn. Mae'r prosiect cyffrous yma - sydd wedi ei ariannu drwy Bartneriaeth Tirlun Llŷn a Chronfa Treftadaeth y Loteri - yn gyfle i glodfori bywyd y tyddynnwr, a'i gyfraniad i dreftadaeth a chynefinoedd Cymru.

Mae'r tir o amgylch y tyddynnod yn cael ei adfer fel porfa lled naturiol ac mi fydd cyfle i denant Tan yr Ardd amaethu'r tir yn ogystal â dangos grwpiau addysgiadol o gwmpas y bwthyn arall, Fron Deg, fydd wedi ei gyflwyno fel yr oedd hi yn 'oes y tyddynnwr'.

***Richard Neale** yw Rheolwr Prosiect Ymgysylltu Arfordirol yr Ymddiriedolaeth Genedlaethol.*

Ymddiriedolaeth Genedlaethol / National Trust

The Benefits of Bushcraft

Mae technoleg wedi ein hynysu braidd rhag byd natur. Ond gydag ychydig o hyder, gall yr hen a'r ifanc fel ei gilydd ddarganfod y pleser o ddod i gysylltiad â natur. A pha le gwell i ddechrau nag o flaen tân gwersyll, fel y dengys SAUL BURTON.

Technology has insulated many of us from contact with nature. But with a little confidence-building, young and old can discover the joy such contact brings. Where better to start than at a camp fire, as SAUL BURTON demonstrates.

No matches involved!

It was a damp, still morning and the scent of fox hung in the air. The two children shuffled nervously at the edge of the small clearing. Unsure of whether they should enter, each wanted the other to make the first move. Drawn by the smell of wood smoke and the crackling of a 'real' fire, they glanced towards their mum and dad following behind.

A friendly greeting from me and a nod from mum and their apprehension was quickly overcome. They hurried towards the fire and held out their hands to feel the warmth, blinking away the swirling smoke.

I asked them if they wanted to have a go at cooking on a campfire. Having briefly run through thoughts such as "but I can't cook" and "but I shouldn't play with fire because it's dangerous", they threw caution to the wind. The answer, somewhat predictably, was a resounding YES!

Today's menu consisted of bannock, a type of bread cooked over a fire. The dough-like mixture is rolled into a long, thin sausage and wrapped in a spiral around the end of a green, peeled hazel stick. Having washed their hands, the children set to rolling out the long sausage of dough,

©National Trust Images/Paul Harris

Children enoying climbing the trees at Erddig near Wrexham

just like Play-doh! Once the dough was carefully coiled around the stick, it was then held over the embers to cook. The excitement grew as the bannock swelled and turned golden brown.

Following a lesson in patience (the dough needs to be cooked slowly over the embers so that it is cooked in the middle and not scorched on the outside), the kids proudly waved their freshly cooked bannock under their parents' noses. Then the inevitable question... "Can we eat it?" After a tentative nibble, the realisation that not only was this stuff edible, but that it was nice and warm, and it tasted like... well, like bread, the bannock disappeared in seconds flat.

With a sense of satisfaction, Number 47 was ticked off the list, and a sticker was proudly placed in each booklet. That's one less thing to do before the ripe old age of 11¾. They left the clearing with the smell of wood smoke in their hair and a newfound connection with the outdoors.

Getting started

I started working for the Trust in April 2012. On my first day I was informed that I would be attending the Outdoors and Nature conference at Clumber Park. This provided an opportunity to gain more of an insight into the workings of the organisation and meet a few of the people I would be working with; and to learn about two very interesting Trust campaigns: *Getting Outdoors and Closer to Nature* and *50 Things to do Before You're 11¾*. As Park and Garden manager, both of these initiatives fall within my remit and are aimed at getting people of all ages to enjoy themselves in the great outdoors. I returned to Erddig from the conference enthused and was immediately plunged into the launch of the *50 Things* campaign. This involved den building and cooking over a fire – all good fun!

One of the things I have brought with me to the Trust is a passion for bushcraft. "What is bushcraft?" I hear you ask. Bushcraft is a generic term to describe the accumulated knowledge built up over millennia by people living within a natural environment.

It is a vast topic, which branches into plant identification, wild food, fire lighting, shelter building, how to find and purify water, animal behaviour, hunting and trapping, craft work such as wood carving, making string and basketry... and the list goes on! In recent years bushcraft and survival skills have seen an increase in popularity. This is largely due to television programmes by the likes of Ray Mears and Bear Grylls. Indeed, being Chief Scout has enabled Bear Grylls to reach a global audience of 11¾-year-olds.

Apart from being a great release from the gadgetry of the modern age, people see bushcraft as an ideal way of reconnecting both with the natural environment, and with themselves. People of all ages gain satisfaction and a sense of wonder from rediscovering ancient skills such as the ability to create fire or cordage from natural materials.

Gaining a little bit of bushcraft knowledge will change your outlook on life. Instead of seeing simply woodland, you see a larder of nuts and berries, plants and fungi. Some types of wood are better than others for carving and some burn better than others, giving longer lasting embers for cooking. You see animal tracks and signs and learn to read the story that the clues hint at. By collecting wild food, you are interacting with nature on the deepest level – people have been gathering food since the dawn of time, just as we do today. You cannot get much closer to nature than relying on it to provide warmth, comfort and food.

Mandy Marsh

planning a wild camping trip or just building a den in the garden. At the Outdoor and Nature conference, The Trust's former Director General Fiona Reynolds quoted Sir David Attenborough: *"No-one will protect what they do not first care about."* Another of the Trust's tenets is creating a strong bond between people and place. Igniting that spark of interest and re-kindling peoples' love for nature is key to ensuring that future generations do indeed care about it and seek to protect it.

I am lucky enough to be in a position to add a great resource to the already broad offer at Erddig. One of the key user groups – what is known in the Trust as Explorer Families – was under-represented in our visitor attendance. In a bid to rectify this, we have created an area for natural play. This encompasses a den-building area, a picnic area, a fire pit and seating area for bushcraft events, and a Forest School with plenty of natural play items. The benefits of natural play are well documented. It encourages problem-solving, assessment of risk, risk-taking (in a controlled environment) and stimulates imagination and self-led play.

The area provides an ideal setting in which families can play, learn and develop an affinity with nature. To quote Octavia Hill, one of the founders of the Trust: *"The need of beauty, the need of air, the need of exercise, the sight of sky and things growing, these human needs are common to all"*. By encouraging families to experience nature on a more intimate level we address this need.

I feel very privileged to be able to change the way in which people perceive and interact with the world around them. Once the connection is made, it cannot be undone. I get a real buzz when people leave one of my events fired up with enthusiasm,

Saul Burton *is Park and Garden manager at Erddig, near Wrexham.*

Acknowledgements

We would like to thank CCW for their assistance in funding projects at Erddig.

What is '50 Things to do before you're 11¾?'

The '50 Things to do before you're 11¾' initiative is in response to a report commissioned by the National Trust, which highlighted research that fewer than one in ten children regularly play in wild places compared to almost half a generation ago. It also found that a third has never climbed a tree, one in ten cannot ride a bike, and three times as many are taken to hospital after falling out of bed, as from falling out of a tree.

Our campaign provides a checklist for under-12s (and those who are young at heart) including everything from running around in the rain and bug hunting, to setting up a snail race, damming a stream, flying a kite and making a (delicious) mud pie.

www.50things.org

B...than Wyn Jon...

Planhigion Meddyginiaethol

Merywen - *Juniperus communis* - Common Juniper

Ers cyn cof, ac ym mhedwar ban y byd, mae planhigion wedi cael eu defnyddio i drin gwahanol anhwylderau. Mae'r wybodaeth am rinweddau meddyginiaethol planhigion wedi cael ei drosglwyddo o genhedlaeth i genhedlaeth ac o oes i oes ar ffurfiau ysgrifenedig a llafar. ***BETHAN WYN JONES** sy'n olrhain rhywfaint o'r hanes cyfareddol hwn sydd ynghlwm wrth blanhigion gwyllt ac yn datgelu ychydig o gyfrinachau meddyginaethol ambell blanhigyn cyffredin sy'n tyfu yma yng Nghymru.*

Rai blynyddoedd yn ôl bellach cafwyd hyd i fedd dyn Neanderthalaidd yn Irac. Roedd o wedi ei gladdu mewn ogof a hynny tua 60,000 o flynyddoedd yn ôl. Yn yr ogof hon hefyd cawsant baill wyth o wahanol rywogaeth o blanhigion blodeuol. Yn amlwg, allwn ni ddim bod yn siŵr pam roedd y blodau yma wedi cael eu gadael yno hefo'r corff. Oedden nhw yno i harddu'r bedd neu i sicrhau rhwydd hynt iddo mewn byd arall? Ni wyddom. Allwn ni ddim ond dyfalu. Be sy'n ddiddorol ydi fod saith o'r rhywogaethau yma yn dal i gael eu defnyddio heddiw gan Iraciaid lleol fel planhigion meddyginiaethol. Yn fwy diweddar bu astudiaeth o ddannedd penglogau Neanderthalaidd o Ogledd Sbaen a ddangosodd eu bod wedi defnyddio'r camri a'r milddail.

Mae'n anodd bod yn siŵr pryd yn union y dechreuodd dyn wneud defnydd o blanhigion meddyginiaethol – y cyfan y gallwn ei ddweud ydi fod dyn ac anifail wedi gwneud defnydd ohonynt ers miloedd o flynyddoedd. Dros y canrifoedd cyhoeddwyd sawl llawysgrif a llyfr ar feddyginiaethau llysieuol. Roedd traddodiadau cynnar yn honni mai

cnawd y duwiau oedd planhigion, a'r duwiau yn eu tro yn dysgu dynion sut i'w defnyddio'n gywir. Daw'r dystiolaeth gynharaf o gofnodion am feddyginiaethau Ilysieuol o'r Aifft, Mesopotamia a Tsieina.

Tua 2700 CC fe wnaeth yr Ymerawdwr Shen-nung ysgrifennu'r Pen T'sao Chin, oedd yn rhestru'r gwahanol berlysiau meddyginiaethol. Roedd o wedi blasu cannoedd o wahanol lysiau ei hun (gan gynnwys rhai gwenwynig yn ôl pob sôn!) i weld os oedden nhw'n llesol ai peidio. Yn ôl rhai roedd ei waith yn greiddiol i ddatblygiad meddyginiaeth Tsieineaidd draddodiadol.

Yn Swmer, oedd yn wladwriaeth ddinas yn yr Hen Fesopotamia, cafwyd hyd i dabled ysgrifennu oedd yn 5000 o flynyddoedd oed ac arni restrau o ragnodau meddyginiaethol.

Mae'r Ilysieulyfr cyntaf i oroesi (*Papyrws Ebers*) yn dod o'r Aifft o tua 1500 CC ac wedi'i ysgrifennu ar bapyrws; credir fod yr hyn sy'n ysgrifenedig wedi'i gasglu ers tua ugain canrif cyn hynny. Gwyddai'r Eifftiaid am rinweddau'r ferywen (*Juniperus communis*; common juniper) a defnyddiwyd y goeden hon dros y canrifoedd. Mae echdynnyn o'r ferywen yn gallu bod yn farwol, ond eto mae olew o'r goeden wedi cael ei ddefnyddio i wneud gin ac i biclo cig. Cyfeiriodd Pliny fod modd defnyddio olew y ferywen i gadw corff marw, ond yn achosi'r byw i ddihoeni, ac yn nodi'r anghysonder am fod y ferywen yn dwyn bywyd oddi ar y byw ond yn ei roi i'r meirw.

Bethan Wyn Jones

Danadl poethion - *Urtica dioica* - Nettles

Mae Culpepper yn nodi fod yr aeron aeddfed yn gymorth i roi "safe and speedy delivery to women with child". Mae'r cyfeiriad hwn yn ddiddorol, gan fod defnydd helaeth wedi'i wneud o'r ferywen i erthylu yn ogystal â rhoi cymorth wrth esgor. Mae'r cemegau sy'n yr aeron yn ysgogi cyfangiad yng nghyhyrau'r groth a dyna pam roeddynt yn cael eu rhoi i ferch yn ystod gwewyr esgor. Yn yr un ffordd yn union, roedden nhw hefyd yn cael eu defnyddio i gael gwared â baban nad oedd croeso iddo.

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Dail tafol - *Rumex obtusifolius* - Broad-leaved Dock

Yn Saesneg mae dweud fod rhoi genedigaeth "under the savin tree" yn ffordd arall o ddweud fod erthyliad wedi digwydd drwy ddefnyddio aeron y ferywen. Y rhywogaeth *Juniperus sabina*, oedd yn cael ei adnabod ar lafar fel y 'savin', oedd y ferywen oedd yn cael ei defnyddio yma. Er mai ychydig iawn o gyfeiriadau gewch chi at yr arferiad yma mewn llên gwerin, mae'n debyg fod y defnydd o'r ferywen i'r perwyl hwn yn eithaf cyffredin

Mae'n dyled yn fawr i'r Groegwyr hefyd ac yn arbennig rhai fel Theoprastws, Hipocrates a Pedainus Dioscoroides (40 -90 OC) a ysgrifennodd De Materia Medica yn y ganrif gyntaf o Oed Crist.

Yng Nghymru cafodd gwaith Meddygon Myddfai ei ddiogelu yn Llyfr Coch Hergest a chredir iddo gael ei ysgrifennu rhwng 1382 a 1410. Mae Llysieulyfr Salesbury hefyd yn waith o bwys, a chynhyrchwyd y llawysgrif tua 1597.

Mae arferion yn awgrymu mai cofio'r meddyginiaeth llysieuol roedd pobl yng Nghymru a'r wybodaeth yn cael ei throsglwyddo o'r naill genhedlaeth i'r llall. Ystyriwch, er enghraifft, beth fyddwch chi'n ei wneud pan fyddwch yn llosgi hefo danadl poethion (*Urtica dioica*; nettles). Ydw i'n gywir yn dyfalu mai'r hyn fyddech chi'n ei wneud oedd chwilio am y dail tafol (*Rumex obtusifolius*; broad-leaved dock) agosaf,

poeri arnyn nhw a'u rhwbio ar y fan oedd yn llosgi? A tybed pwy wnaeth eich dysgu i wneud hyn? Ydw i'n iawn yn meddwl mai eich mam neu ryw blentyn arall wnaeth? Siŵr o fod, ac fel hyn yn ddigon syml roedd y meddyginiaethau'n cael eu pasio o un genhedlaeth i'r llall.

Roedd danadl poethion hefyd yn cael eu defnyddio fel llysiau llesol. Cesglid hwy yn y gwanwyn fel rheol, pan oedden nhw'n ifanc ac ir, a'u defnyddio i wneud tonig. Mae hyn yn gwneud synnwyr gan fod yna lawer o haearn yn y danadl a byddai hyn yn dda at glirio'r gwaed ac felly yn clirio penna ddynod, sbotia ar y croen, a doluriau o bob math. Mae 'na ddywediad yn Saesneg "Three nettles in May keeps all diseases away" – wel o leiaf am weddill y flwyddyn!

Defnydd pwysig arall i'r dalan poethion oedd at drin cryd-cymalau ac mae cofnodion o hyn yn mynd yn ôl cyn belled ag oes y Rhufeiniaid. Rhaid cyfaddef mai'r defnydd mwyaf rhyfeddol o'r planhigyn yma oedd gan ddynion yn eu sanau fel dull atal cenhedlu. Dydw i ddim eto wedi cyfarfod ag unrhyw un sydd wedi defnyddio'r dull hwn.

Mae yna bob math o anhwylderau eraill ble mae'r danadl poethion wedi eu defnyddio i'w trin. A dyma rai ohonynt: y clefyd melyn, cur pen, pigiadau pryfetach, cen ar y pen, chwarennau wedi chwyddo (a goitr [y wen] yn arbennig), dropsi, crwn neu'r gron, diffyg traul, pigyn clust, pwysedd gwaed uchel, eryr neu'r eryri, clwy'r marchogion, llyngyr, epilepsi, crampiau a chyrn ar y traed.

Mae'r milddail (*Achillea millefolium*; yarrow) yn blanhigyn cyffredin arall sydd wedi'i ddefnyddio'n helaeth yng nghefn gwlad. Cesglir y blodau ar gyfer cael cyffuriau ohonyn nhw. Byddant yn cael eu torri a'u gadael i sychu naill ai ar lawr neu drwy eu hongian o'r to ond heb adael i'r tymheredd fynd dros 40 gradd Celsiws. Arogl aromatig sydd gan y planhigyn a blas chwerw sydd iddo, ond mae'r cyffur yn codi chwant bwyd, ac mae'n dda at gylchrediad y gwaed. Mae hefyd wedi ei ddefnyddio i drin anhwylderau'r iau a'r bustl.

Mae'r gwreiddgyff neu'r rhisom, yn dda at gryd-cymalau ac at drin y ddannodd. Blas siarp, tebyg iawn i bupur sydd ar y dail, ac mae modd defnyddio'r rhain mewn salad.

Roedd dail y milddail yn cael ei ddefnyddio yng nghyfnod yr Eingl-Sacson, ac un enw Saesneg arno ydi 'staunchweed' am ei fod yn cael ei ddefnyddio i atal llif gwaed o archollion agored. Mae'n cael ei adnabod fel 'gwair y saer' mewn ambell i ardal yn Lloegr - hwn eto, mae'n bur debyg yn gyfeiriad at ei ddefnydd i atal llif y gwaed.

Planhigyn cyffredin arall a ddefnyddid oedd bysedd y cŵn neu'r bysedd cochion (*Digitalis purpurea*; foxglove). Dyma'r Digitalis enwog sydd wedi'i ddefnyddio i drin clefydau'r galon, ond, fel llawer iawn o bethau eraill, mae angen cymedroldeb wrth ei ddefnyddio. Mymryn yn ormod, ac mae'n farwol.

Mae tystiolaeth fod Galen y Groegwr, oedd yn byw rhwng 130 a 200 OC, yn ei ddefnyddio ond nad oedd yn sylweddoli ei fod yn effeithio'r galon. Ei ddull o dynnu'r elfennau gweithredol o'r planhigyn oedd gwasgu nifer o'r planhigion a chasglu'r sudd ohonynt.

Y cemegau yn y dail sy'n gyfrifol am effeithio ar y galon. Yn wreiddiol, fe'i defnyddid i gael gwared â dŵr o'r corff, sef cael 'madael â'r dropsi'. Roedd pobl yn gwybod ers tro byd fod bysedd y cŵn yn dda i gael

Bethan Wyn Jones

Bysedd y cŵn - *Digitalis purpurea* - Foxglove

Milddail - *Achillea millefolium* - Yarrow

gwared â dŵr o'r corff. Wir, roedd yn effeithiol iawn ac weithiau'n rhy effeithiol gan achosi'r claf i farw!

Yn y ddeunawfed ganrif dangosodd William Withering mai'r galon yn hytrach na'r arennau oedd yn cael ei heffeithio gan y cemegau. Drwy gryfhau a rheoli curiad y galon roedd yr arennau'n gweithio'n well ac felly'n gwaredu dŵr o'r corff ond roedd faint o'r trwyth oedd yn cael ei ddefnyddio yn holl bwysig. Ychydig yn ormod, ac fe fyddai curiad y galon yn cael ei atal.

Mae Emyr Wyn Jones (Emyr Feddyg) yn ei gyfrol Lloffa yn Llŷn yn cyfeirio at allu un o'i hynafiaid, sef Hen Wraig, Bryn Canaid neu 'Meddyges Bryn Canaid' i ddefnyddio bysedd y cŵn. Anne Griffith oedd ei henw a bu farw yn 1821 yn 87 mlwydd oed. Nain ei nain ar ochr ei Dad oedd hon ac roedd yn gyfarwydd â defnyddio bysedd y cŵn. Roedd yn casglu dail, coesau a blodau a'u rhoi mewn cafn oedd mewn craig. Byddai'n rhoi pwysau ar ben y bysedd cochion ac wedyn yn rhoi dŵr glaw ar eu pen. Gadewid hwn nes roedd y dŵr yn ddu; cymryd peth ohono a'i roi mewn potel ac yna ychwanegu dŵr glân ato, a'i rannu 'at wendid y galon'.

Be sy'n gwneud y stori hon yn arbennig o ddifyr ydi fod yr hen wraig yn byw tua dwy ganrif yn ôl a hyd y gwyddys, doedd hi ddim yn gallu darllen. Mae Emyr Wyn Jones yn nodi mai'r llyfrau fyddai ar gael yn y cyfnod yma oedd gwaith John Gerard a gwaith Nicholas Culpepper. Dydi'r naill na'r llall yn cyfeirio at rinweddau bysedd y cŵn i drin afiechydon y galon. Yn 1785 y cyhoeddodd Withering ei waith, ac yn ôl pob sôn wedi clywed am hen wraig oedd yn byw yn Swydd Amwythig oedd yn defnyddio bysedd y cŵn roedd o.

Yn Lloffa yn Llŷn, mae Emyr Wyn Jones yn holi sut y gwyddai'r hen wraig yn Swydd Amwythig a Hen Wraig, Bryn Canaid am ddefnyddioldeb bysedd y cŵn i drin 'gwendid y galon'? Cwestiwn da a hyd y gwela i un ateb sydd 'na: roedd y ddwy wedi clywed am hyn gan rywun arall ac wedi defnyddio'r wybodaeth i wella pobl yn eu hardaloedd eu hunain.

Gair i gall, mae'n ddigon difyr dysgu am hen feddyginiaethau ond da chi byddwch yn ofalus cyn mynd ati i baratoi a chymryd rhai eich hun – mi all fod y peth olaf wnewch chi!

*Magwyd **Bethan Wyn Jones** yn y Talwrn, Sir Fôn, ac mae'n dal i fyw yno. Graddiodd mewn Sŵoleg o Goleg Prifysgol Cymru Aberystwyth. Mae'n cyfrannu'n wythnosol i Galwad Cynnar ar Radio Cymru, a cholofn bob wythnos am wahanol agweddau ar fyd natur i'r Herald Cymraeg yn y Daily Post. Cyhoeddodd sawl llyfr gan gynnwys Bwrw Blwyddyn, Chwyn Joe Pye a Phincas Robin, Natur y Flwyddyn a Chyfres Doctor Dail.*

Medicinal Plants

The use of plants in medicine goes back thousands of years. The earliest Herbal, written 3,500 years ago, shows a high level of understanding of plants such as Juniper. In Wales, the work of the Physicians of Meddfai was written down as early as the 14th century, but the herbalist tradition has largely been an oral one, in the same way that knowledge of the benefits of rubbing a dock leaf on a nettle sting has been passed down through the generations rather than learned from books.

Plants used commonly for their medicinal properties include nettles, yarrow and foxglove. Although foxgloves were known to have a medicinal effect, their effect on the heart seems to have been known to herbalists before it was ever written down in any herbals.

Llyndy Isaf

A special place and a unique opportunity

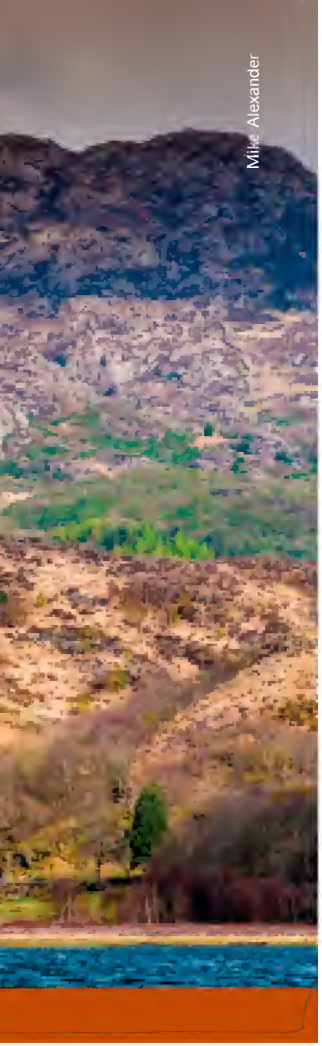
Yn 2011 cododd yr Ymddiriedolaeth Genedlaethol £1miliwn ti brynu'r 250 hectar o dir fferm Llyndy Isaf. Yma mae MIKE HOWE a HELEN BUCKINGHAM yn esbonio'r hyn sy'n arbennig am y lle, y cyfleoedd unigryw sydd i'w cael i warchod natur a'r sialensiau sy'n wynebu'r fferm yn y dyfodol.

In 2011 the National Trust raised £1 million to acquire the 250 ha. Llyndy Isaf farm. Here MIKE HOWE and HELEN BUCKINGHAM explain what is special about the place, the unique opportunities there are for nature conservation and the challenges for the farm in the future.

There are some places that, when you walk into them for the first time, you know are special, places that make you pause in wonder, places that most of us rarely come across in our day to day lives. Llyndy Isaf is one of these.

The farmhouse of Llyndy Isaf lies in Nant Gwynant, which is one of the most dramatic and beautiful valleys in Wales. Its northern slopes rise to the summit of our highest mountain, Yr Wyddfa (Snowdon) and to the south lie the hills of Moel y Dyniewyd and the Moelwynion range. The Afon Glaslyn river runs through two majestic lakes, Llyn Gwynant and Llyn Dinas, and, below the picturesque village of Beddgelert, it tumbles to sea level through the positively alpine Aberglaslyn Pass. This is a world-class landscape and is at the very heart of the Snowdonia National Park.

Llyndy has the aura of an ancient place. The valleys, hills, streams and lake all feel like they have been around for a very long time, and of course


Mike Alexander

the rocks from which they have been carved have been around much, much longer. Even some of the trees are gnarled and twisted by years of growth in rain, wind, cold and, from time to time, luxurious warmth.

And yet there is much that is youthful; the feathery growth of new young trees, or the first spring flowers of dog violet and bluebell tentatively raising their heads through the cold, wet, moss-clad ground. This is an unusual place of great antiquity and brand new life.

The unmistakable influence of human endeavour – the farm buildings, the sheep folds and pens, the field boundary walls and fences – speak of hundreds, if not thousands of years of toil to provide food and shelter for countless generations of people. Many of these features of the landscape are regarded as our heritage, and it has been, and continues to be, the way people interact with that heritage that defines our culture.

To the untrained or uninitiated eye this place looks wild, wonderful and natural. Well, it is wild and wonderful, but it isn't natural. This, above all else, is a cultural landscape. The rich array of habitats, the woodlands, grasslands and heath are as much cultural landscape features as are the buildings and walls. Like anywhere else, landscapes in Wales have emerged from people's interaction with natural resources under changing environmental and economic conditions through time. This continues. But while the character and form of these areas can be explained, it is much harder to predict how they will change in the future.

The special features of Llyndy Isaf

Former owner, Ken Owen, lived with his family on this farm for 35 years and clearly loved it. You can see the care and respect that he and his wife had for the land in every detail of the landscape. There are wonderful woodlands, wood pastures, heaths, mires, wet pastures and flower meadows, and there is the magnificent lake, Llyn Dinas, fed by the River Glaslyn and tributary streams, which are all pure and clean and support a rich array of aquatic life.

The habitats of woodland, grassland and mire all feed these water bodies with naturally recycled nutrients in a relatively unpolluted and undisturbed web of life. The natural value of Llyndy Isaf is significantly enhanced by the transition of habitats running from the heathland, through the woodland to the mire and open water. Essentially the whole is greater than the sum of the parts. One would be hard pressed to locate another part of Snowdonia which demonstrates this combination of features in such a rich mosaic.

Llyndy Isaf has long been used by people for the purposes of rearing stock and is likely to have been part of the royal cattle ranges which covered much of Snowdonia in the medieval period. By 1200AD, 12,000 acres of land in Nantgwynant had been granted to the Cistercian Abbey at Aberconwy by Llywelyn ap Iorwerth (Llywelyn Fawr).

Archaeological remains surviving today date largely to the 18th and 19th centuries. A collection of built structures, pens, folds, enclosures and field walls, scattered across the whole of the property, point to extensive use of the land for cattle, goat and sheep husbandry. At the southern end of the property there is a collection of industrial remains associated with the extraction and processing of copper ore. The remains include adits, working floors, spoil heaps, a dressing house, a domestic dwelling and other associated structures.

The wooded landscape

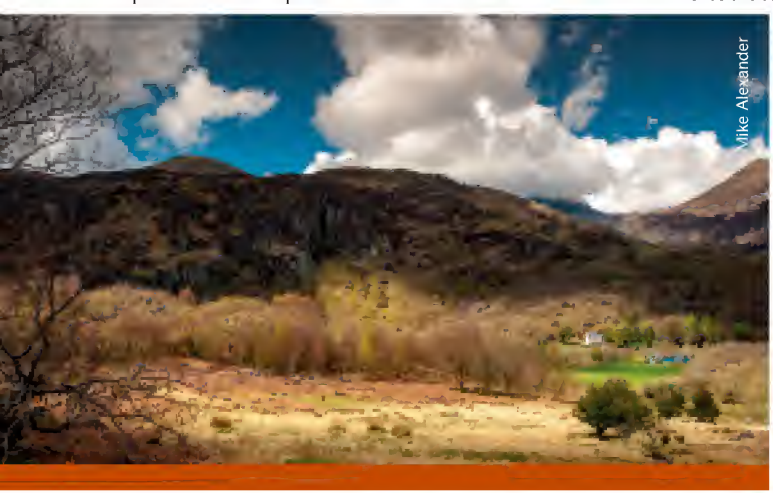
Because grazing intensity on the farm has relaxed so much in the past 30 years, most of the land has developed into what can be loosely termed wood pasture on the lower slopes, and woody heath on the upper slopes. Relatively dense woodland adorns the

lowest slopes along the lake shore, and this woodland is part of the much larger complex of woodlands that make up the Meirionnydd Oakwoods and Bat Special Area of Conservation, which stretches from Dolgellau in the south to Nant Llyn Gwynant in the north.

This large area of woodland is critical for lesser horseshoe bats, which are also dependent on the surrounding heaths, lakes, streams, wetlands and grasslands for their feeding range. The health of the habitats at Llyndy is therefore important for species found on the farm, but also for those in the surrounding landscape.

The sessile oak-dominated woodlands are the temperate rainforests of Britain, with their damp climate and luxuriant growth. Mosses and liverworts form luxuriant carpets and cushions over boulders, dead wood, walls and other surfaces. The dominant mosses are *Rhytidiadelphus loreus*, *Thuidium tamariscinum* and *Polytrichum sp.*, with patches of *Hypnum sp.* and *Plagiothecium undulatum*.

The bird population of the woodlands is exceptional both for species richness and also for the density of some of the breeding species. Jay, Great-Spotted Woodpecker, Treecreeper, Nuthatch, Blackcap and Garden Warbler are present. Other breeding species include Redstart, Pied Flycatcher, Willow Warbler and Bullfinch, along with Song Thrush, Lesser Redpoll and Tree Pipit.


Mike Alexander

Helen Buckingham

Bog Myrtle

The mountain supports a range of structurally diverse heathland communities, with humid and wet heath on the lower slopes through to dry heath on the rocky knolls, and highly oceanic heath with wet flushes on the higher slopes. Being lightly grazed and with no burning for approximately 30 years, the heath has had time to develop a complex structure with a good mix of species.

The heathland varies from short and open in some areas to tall and dense with senescing bushes in others. Heather is regenerating naturally by layering, particularly in areas with a good layer of mosses. Deep, dense mats of heather and bilberry mixed with bulky mosses and sphagnum form in vigorously layering stands on the upper slopes. These stands provide a habitat favourable to certain liverworts and invertebrates that need high humidity and shelter.

On the drier slopes and along the ridge the heath is characterised by a dominance of heather and bell heather, with occasional bilberry and crowberry as an understorey. There are distinct areas of Western Gorse and Hard Shield Fern, and Green Ribbed Sedge is scattered throughout. Where the ground is rocky, lichens and club mosses also form part of the rich heath communities.

There are significant areas of wet heath, flushes and bog occupying the low lying ground, the little valleys and

in-filled lake basins. These are diverse in character with some of the lower mires being dominated by Purple Moor Grass, while the in-filled lake basins support rich bog communities of cotton grasses, sphagnum, Bog Asphodel and sedges. The wet heaths of Deer Grass, Cross-leaved Heath and Bog Asphodel are typical of those found elsewhere in Snowdonia, and they are a significant component of this site on the gently sloping ground.

Breeding birds on the mountain include Meadow Pipit, Wheatear, Whitethroat, Whinchat and Cuckoo. There is very little grazing pressure and Rowan, Birch and Holly saplings and seedlings are frequently found. On the lower slopes there has been tremendous effort to tackle *Rhododendron*, evidenced by the numerous dead shrubs and stumps across the site. But this destructive shrub continues to flourish and attempts to take hold on the farm, with re-growth and saplings found in abundance.

Llyn Dinas and its tributaries

Llyn Dinas is an oligotrophic (nutrient poor) lake with some good areas of aquatic flora and emergent vegetation. Part of the Aber Glaslyn catchment, the lake and its tributaries support sea trout, brown trout and salmon and salmon. It is a wonderful landscape feature in this part of the National Park, its tranquillity drawing in thousands of visitors each year who come to enjoy the peace and beauty of the place. Activities on the water are minimal, and this helps not only to maintain the peace and beauty of the place, but to minimise the opportunities for non-native invasive species to colonise this critically important habitat. The National Trust, in line with the wishes of the previous owner, is committed to preserving this tranquillity.

The most extensive area of emergent marginal vegetation is found in the sheltered bay at the north-eastern end of the lake. This area is dominated by Bottle Sedge with locally abundant Common Reed. Aquatic vegetation includes locally abundant Water Lobelia and occasional Yellow Water-lily. Other plants known to occur in the lake include shore-weed, bog pondweed and intermediate water-starwort. Great crested Grebes breed here, along with other birds such as Dipper, Grey Wagtail and Common Sandpiper.

Mandy Marsh

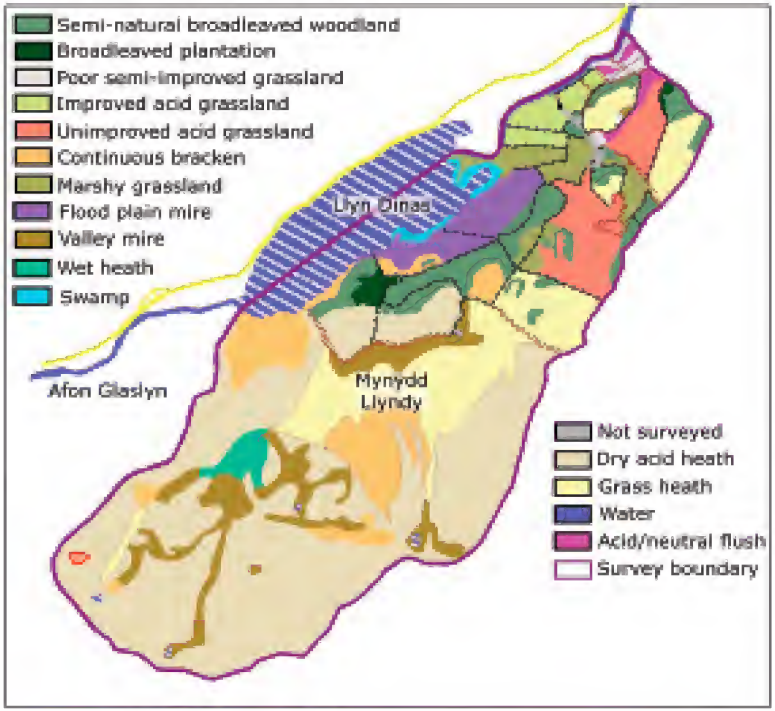
Crowberry *Empetrum nigrum*

The mires and wet pasture

Llyn Dinas is bordered by a large area of Purple Moor Grass dominated mire with peat depths ranging from 60cm over 100 cm. There are distinct fragrant patches of Bog Myrtle and locally sphagnum mosses underlay the dense mat of Purple Moor Grass. Other species include scattered Cotton Grasses, Sedges, Cross-Leaved Heath, and locally frequent Bog Asphodel and Common Cotton Grass. The nationally scarce *Sphagnum affine* has been found here.

A system of pools and runnels occurs, with mud-bottom hollows, marginal *Sphagnum papillosum* lawns and some pools of Bog Bean and several patches of Sundew. Peat cuttings and ditches are evidence of past attempts to make the mire a drier place for stock. With little or no grazing in recent years the Purple Moor Grass is beginning to choke the potentially rich communities here.

Beyond the mire there is a series of fields, a mosaic of mire and marshy grasslands. Some of these areas have been modified by drainage ditches and these are species-poor with rush and heath moss dominant. Elsewhere, richer mire vegetation is found with a mix of sphagnum mosses, cotton grasses and occasional Heath Spotted Orchid and Ivy-leaved Bell Flower.



The meadows

To the north of the farm buildings there are two hay meadows. The drier areas support neutral grassland with abundant Yorkshire fog, Crested Dog's-tail and Rye Grass. Common herbs in the meadows include Yarrow, Common Sorrel, White Clover, Red Clover and Cat's Ear. In the wetter areas of the meadows Soft Rush, Marsh Bedstraw and Greater Bird's-foot Trefoil are frequent. The field in the far north of the farm is a mix of marshy grassland in the areas alongside the river and mossy acid grassland on the steep banks.

Future management

Given the unique qualities of Llyndy Isaf, the continued development of the wood pasture and woody heath is a priority, as is the re-introduction of cattle grazing to the mire. An extensive grazing regime, using hardy cattle and sheep, would optimise conditions for wildlife in the heath, grassland and mire habitats across the farm. There is a wonderful opportunity at Llyndy for woodland to expand up the slope, and this is already happening. You can find rowan saplings extending right to the top of the mountain ridge. The expansion of woodlands will help to establish and reinforce connections along the valley.

Ultimately, the interplay of woodland and heath could create a diverse patchwork or gradation of tree cover and heath. Our desire is to bring about the development of a rich and robust upland environment, able to adapt to the climatic and geopolitical changes that lie ahead for the Welsh uplands.

And this presents a challenge for the National Trust. Farming has created this wonderful landscape over generations, and farming remains central to its continued conservation. The National Trust wishes to provide an opportunity for a farming family to enjoy the richness and culture of the area while promoting an excellent and sustainable upland farming system, where mixed grazing with traditional breeds will be underpinned by agri-environment support mechanisms.

Adopting an innovative apprenticeship approach, each year the National Trust's Llyndy Isaf Scholarship, in partnership with Young Farmers Cymru, will offer guidance and support to give one young farmer the opportunity to live in and manage this iconic upland farm.

We hope this initiative will ensure that the successful candidate would be able to build their confidence and develop their skills in stock management, conservation, business, and practical management through formal and informal training as well as work experience.

Llyndy Isaf is the perfect place to learn about conservation farming, and to highlight the many ways upland farmers can work with the many thousands who come to Wales to discover and enjoy the landscape. It might also have a part to play in

Mandy Marsh

Sundew

the less immediate future, the one where climate change brings unprecedented changes to our landscapes, our wildlife and our way of life.

Many species populations, which have been declining for 50 years, will be put under even more pressure. Conventional wisdom says that we should be making our landscapes more robust, or more permeable for wildlife, which sounds eminently sensible. The trouble is that we don't yet have the tools to achieve this on a landscape scale and it remains to be seen whether the Natural Environment Framework can deliver on this. But at least the National Trust, with its ownership of significant areas of land, can make a really important contribution to this process, and there is no better example of where this can be done than at Llyndy Isaf.

Acknowledgments:
Grateful thanks to contributors to the management plan of Llyndy Isaf, to colleagues in National Trust, CCW, Snowdonia NPA and former owner Ken Owens.

Mike Alexander

Mike Howe *works freelance as a specialist conservation management planner and has, for the last 18 months, been helping the National Trust in Wales to prepare plans for several important properties, including Llyndy Isaf, Dolmelynllyn Estate and Dinefwr Park.* ***Helen Buckingham*** *works as the Wildlife and Countryside Adviser for the NT in Wales.*

Blackcap ***Sylvia atricapilla*** Telor penddu
Bog Myrtle ***Myrica gale*** Helygen Fair
Bottle Sedge ***Carex rostrata*** Hesgen ylfinfain
Brown Trout ***Salmo trutta*** Brithyll
Bullfinch ***Pyrrhula pyrrhula*** Coch y berllan
Cat's Ear ***Hypochaeris radicata*** Melynydd
Common Reed ***Phragmites australis*** Corsen
Common Sandpiper ***Actitis hypoleucos*** Pibydd y dorlan
Common Sorrel ***Rumex acetosa*** Suran y cŵn
Crested Dog's-tail ***Cynosurus cristatus*** Rhonwellt y ci
Dipper ***Cinclus cinclus*** Bronwen y dŵr
Garden Warbler ***Sylvia borin*** Telor yr ardd
Great-crested Grebe ***Podiceps cristatus*** Gwyach fawr gopog
Greater Bird's-foot Trefoil ***Lotus pedunculatus*** Pysen-y-ceirw fawr
Great-spotted Woodpecker ***Dendrocopous major*** Cnocell fraith fwyaf
Grey Wagtail ***Motacilla cinerea*** Siglen lwyd
Heath Spotted Orchid ***Dactylorhiza maculata*** Tegeirian brych y rhos
Ivy-Leaved Bell Flower ***Wahelenbergia hederacea*** Clychlys dail eiddew
Jay ***Garrulus glandarius*** Sgrech y coed
Lesser Redpoll ***Carduelis cabaret*** Llinos bengoch leiaf
Marsh Bedstraw ***Galium palustre*** Briwydd y gors
Nuthatch ***Sitta europaea*** Delor y cnau
Pied Flycatcher ***Ficedula hypoleuca*** Gwybedog brith
Purple Moor Grass ***Molinia caerulea*** Glaswellt y gweunydd
Red Clover ***Trifolium pratense*** Meillionen goch
Redstart ***Phoenicurus phoenicurus*** Tingoch
Rye Grass ***Lolium*** **spp** Rhygwellt
Salmon ***Salmo salar*** Eog
Sea Trout ***S. trutta morpha trutta*** Sewin
Soft Rush ***Juncus effusus*** Brwynen babwyr
Song Thrush ***Turdus philomelos*** Bronfraith
Sphagnum Migwyn
Tree Pipit ***Anthus trivialis*** Corhedydd y coed
Treecreeper ***Certhia familiaris*** Dringwr bach
Water Lobelia ***Lobelia dortmanna*** Bidoglys y dŵr
White Clover ***Trifolium repens*** Meillionen wen
Willow Warbler ***Phylloscopus trochilus*** Telor yr helyg
Yarrow ***Achillea millefolium*** Milddail
Yellow Water-lily ***Nuphar lutea*** Lili'r dŵr felen
Yorkshire Fog ***Holcus lanatus*** Maswellt penwyn

George Tordoff

Day-flying Moths of Wales

Species to look for in the spring

Wrth i'r haul gryfhau ac wrth i'r dyddiau ymestyn, mae curiad calon natur yn dechrau cyflymu. Ein tuedd yw canolbwyntio ar flodau fel clychau'r gog, adar fel gwenoliaid a glöynnod fel y gwyn blaen oren. Ond dylem ychwanegu at y rhestr ambell wyfyn hardd sy'n hoff o hedfan yn ystod y dydd – gwyfynod sy'n tueddu i gael eu hanwybyddu braidd. Yma mae GEORGE TORDOFF yn ein rhoi ar ben ffordd.

As the sun strengthens and the days lengthen, we look out for signs of the rising pulse of nature. We focus on spring flowers such as bluebells, birds such as swallows and butterflies such as orange-tips. We should add some beautiful and overlooked day-flying moths to the list. GEORGE TORDOFF tells us what to look for.

Speckled yellow *Pseudopanthera macularia* on author's walking boot

Day-flying moths are a somewhat neglected group of Lepidoptera. They are overlooked by many moth recorders, who focus on the contents of their light traps, and by some butterfly recorders, simply because they're not butterflies. As a consequence, they are often under-recorded in comparison with their nocturnal counterparts and with butterflies. This is a shame. Our day-flying moths include many handsome species which rival the butterflies with which they fly.

Day-flying moths come in all shapes and sizes, from tiny metallic micro-moths to the huge Oak Eggar *Lasiocampa quercus*. This article is about some of the species which fly in the spring and early summer and can be encountered across much of Wales in suitable habitats. These spring species often abound in sunny,

Janet Graham

Orange underwing *Archiearis parthenias*

Common heath *Ematurga atomaria* male

flower-rich grasslands and woodland rides, and are thus indicators of good-quality habitats. Given the loss or deterioration of these habitats during the last century, it will come as no surprise that many of these moths are also in decline in the UK.

Seven species are featured here, the first five of which are from the butterfly-like Geometridae family, with the final two being members of the Noctuidae. The latter family is mostly made up of stout-bodied and rather plain night-flying species, but does includes some daintier day-fliers. There are other day-flying spring species, such as the Emperor and Fox *Macrothylacia rubi* moths, but these fly very rapidly and hardly ever allow close observation. Also omitted from this article are a few very rare day-fliers, including Drab Looper *Minoa murinata* and Narrow-bordered Bee-hawk moth *Hemaris tityus*. Wales holds important populations of these species, but they are unlikely to be encountered unless you are lucky enough to visit one of their few remaining sites.

Orange Underwing *Archiearis parthenias*. This is the earliest of the featured species to look for. From mid March to mid April check the leafless canopy of a mature birch on a sunny, still day and you may see one or two little moths flitting about. Closer inspection through binoculars will reveal a moth which appears orange in flight, although as the name suggests this colour is restricted to the hindwings. If you are very lucky the moth may descend low enough for closer inspection. They are reported to fly lower in the afternoon and drink at puddles[1], though I have never witnessed this myself. The moth frequents habitats with large birches, the larval foodplant, particularly open woodland and heathland. I have seen them in closed-canopy woodland but they are more difficult to spot through the meshwork of branches. The species seems to have done well in recent years, due to a run of sunny and warm, early springs. It is locally common across Wales but is under-recorded due to its canopy-dwelling habit and early flight season. It can be confused with the very similar Light Orange Underwing *Archiearis notha*, but this has not been recorded in Wales for over a hundred years.

Common Heath *Ematurga atomaria*. The first encounter with this species is usually of a small, brownish moth flying low over moorland vegetation. A closer look reveals the moth to have beautiful silver or golden wings speckled with brown, and a series of brown cross lines. The males sport a fine pair of feathered antennae. The moth is at large from late April through to early July and is especially common on moorland and heathland, and also in heathy woods, where the larvae feed on Ling *Calluna vulgaris*, Bell Heather *Erica cinerea* and Cross-leaved Heath *E. tetralix*. The moth sometimes occurs in grassland habitats in the lowlands, where larvae feed on clovers and trefoils.

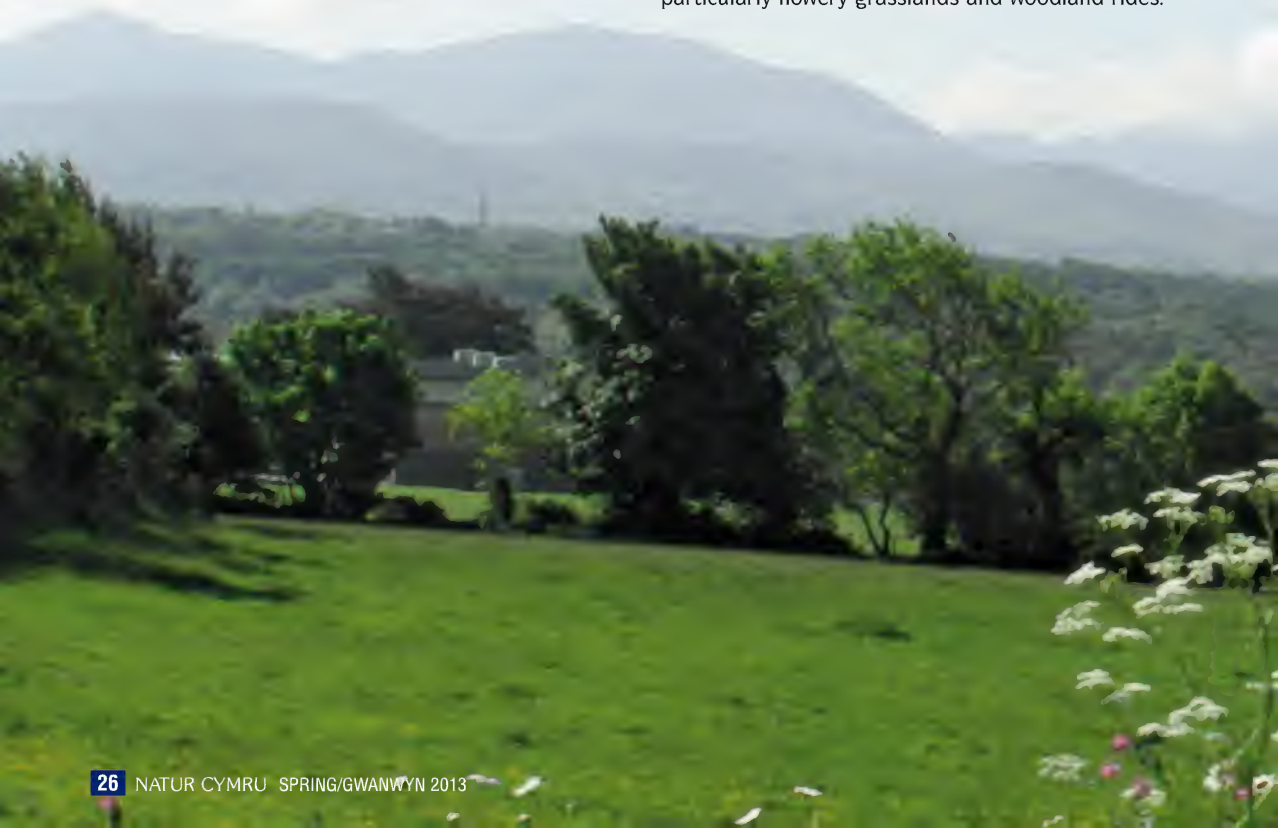
Latticed Heath *Chiasmia clathrata*. This species flies slightly later than common heath, from late May to August, but when both species are on the wing they can be confused. The colouration is similar, but

Latticed Heath is more strikingly marked, with a strongly contrasting pattern of dark cross lines on a silvery ground colour. Unlike Common Heath, this is mainly a lowland species in Wales, being most common in coastal areas. The larval foodplants are clovers and trefoils and the moth inhabits areas where these species are plentiful, particularly rough grasslands, waste ground and open woods; I have even recorded one in my suburban Cardiff garden.

Chimney Sweeper *Odezia atrata*. Larvae of this unmistakable black moth feed only on Pignut *Conopodium majus*. The species is restricted to flower-rich meadows, road verges and woodland margins containing the foodplant. It cannot tolerate heavy stock grazing as the larvae feed mainly on the flowers, which are liable to be grazed off. The moth, which flies in June, remains locally widespread in north and west Wales, but is very scarce in south and east Wales.

Speckled yellow *Pseudopanthera macularia*. This striking little moth is locally common in much of north and west Wales, with the exception of Anglesey, but like the Chimney Sweeper is rare in the south and east. The moth occurs where Wood Sage *Teucrium scorodonia* grows in sheltered sunny conditions, particularly on bracken *Pteridium aquilinum* slopes, in open woodland and among scrub. It is a late spring species, occurring in May and June.

Mother Shipton *Callistege mi*. The curious name of this species comes from the face-like mark on each forewing, which resembles the hooked nose and prominent chin of the 16th century Yorkshire witch of the same name. The moth does not closely resemble any other, but could be mistaken for the Grizzled Skipper butterfly *Pyrgus malvae*. The two species are similar in colour and occur in similar habitats, but the butterfly is smaller and lacks the hag-faced markings on the forewings. Mother Shiptons can be found on sunny days in May and June. The larvae feed on clovers, trefoils and sometimes also coarse grasses, and the moth can occur in any habitats where these species abound, particularly flowery grasslands and woodland rides.



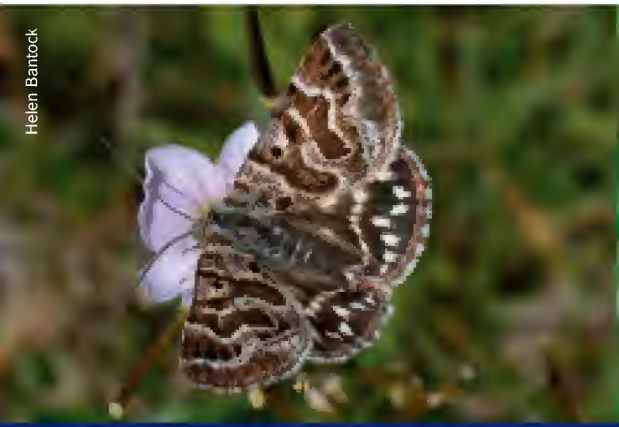
Gaynor Ainscough

Latticed heath *Chiasmia clathrata*

Chimney sweeper *Odezia atrata*

The moth is locally common in the Welsh lowlands and also extends into the uplands in some areas.

Burnet Companion *Euclidia glyphica*. Like the Mother Shipton, this species is more often mistaken for a butterfly than another moth. In this case the confusion species is Dingy Skipper *Erynnis tages,* which occurs in the same habitats and at the same time of year. The dull brown forewings of the two species are similar, but unlike the Dingy Skipper the Burnet Companion has orange hindwings, which are conspicuous in flight. The moth is local and restricted to the lowlands throughout much of Wales, but it is common and widespread in Glamorgan and Gwent, including upland areas of the South Wales valleys where it often occurs on old coal spoil tips. Other habitats include both dry and damp flowery grasslands and woodland rides. Like many of the other featured species the larvae feed on clovers and trefoils. They fly in May and June, often in the company of Mother Shipton. In the latter part of


Helen Bantock

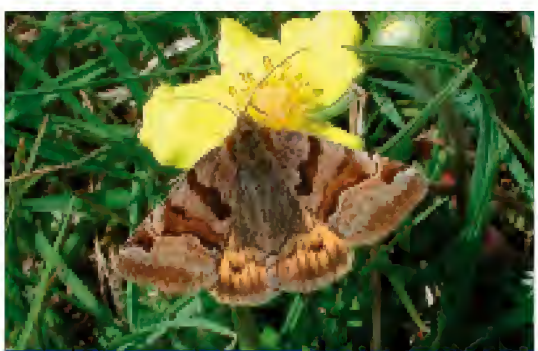
Mother Shipton *Callistege mi*

Helen Bantock

Grizzled Skipper butterfly *Pyrgus malvae*

the flight season they often fly with the first of the Burnet moths *Zygaena spp.*, hence the common name.

Wherever you live in Wales, at least one of these moths will probably be present in your local area. I hope this article will encourage you to go out and look for them. The lightest and least expensive guidebook currently available is the *Concise Guide to the Moths of Great Britain and Ireland*[2]. This contains illustrations of and brief information about all the macro-moths found in the British Isles, and can easily be slipped into a rucksack or large pocket. An insect net is useful, but many of the species come to rest frequently and can be observed with close-focusing binoculars. Do please send any records to your County Moth Recorder – contact details can be found on the Butterfly Conservation website: **www.mothscount.org/text/57/county_moth_recorders.html**


Helen Bantock

Burnet Companion *Euclidia glyphica*

Acknowledgements

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George Tordoff *is a Conservation Officer for Butterfly Conservation Wales. He has been recording moths since being given a moth trap for his 12th birthday.*

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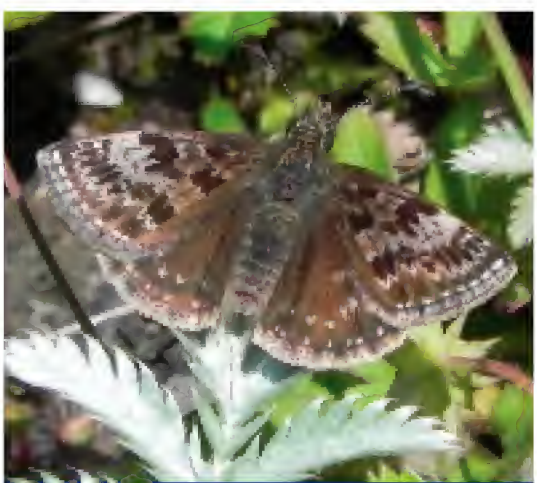
Maggie James

Dingy Skipper *Erynnis tages*

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Cutting-edge heathland conservation

Welsh Black at Uwchmynydd: Ynys Enlli in the background

Yn eu hymgyrch i ailgyflwyno dulliau amaethyddol traddodiadol i Lŷn, mae'r Ymddiriedolaeth Genedlaethol wedi ymuno â phartneriaeth i adfywio byd natur a threftadaeth unigryw'r ardal, fel yr esbonia ROBERT PARKINSON.

In its campaign to reintroduce traditional agricultural practices on the Llŷn the National Trust has joined in a partnership to regenerate the peninsula's unique nature and heritage, as ***ROBERT PARKINSON*** *reports.*

In the past 100 years there has been a dramatic decrease in the area of heath on the Llŷn peninsula, with a 50% reduction in dry heath and a 97% reduction in wet heath coverage from 1922 to 1988. Much of the remaining heathland is in a poor state, with a dominance of gorse and bracken. The HLF-funded Llŷn Landscape Partnerships Heathland Restoration Project is a response to this decline.

Two innovative techniques have proved useful: aerial spraying of bracken by helicopter has resulted in dramatic reductions in bracken on three separate sites on the Llŷn; and a Ryetec machine (specifically designed for conservation) has allowed us to cut and remove gorse, which is very important because maintaining low nutrient values will create conditions which favour the re-growth of heather.

This project has revived the age-old practice, which had disappeared from the area, of using gorse as bedding for animals, saving a small fortune for the handful of local farmers who trialled it.

Quality heathland beef is another outcome which may emerge from the project. Local graziers are being given the opportunity to participate in

Chough

a scheme that will process quality beef from livestock reared on the peninsula's heathlands and sell it locally.

Cattle v. sheep

The reintroduction of grazing to some of these neglected heaths is crucially important, and cattle and ponies seem to be more effective than sheep. One of the National Trust's tenants, Gareth Roberts, has begun grazing Bychestyn (one of the target sites) with Welsh Black cattle. The resulting tussocky vegetation structure is good for breeding birds and provides microclimates for invertebrates. Cattle dung is also good for invertebrates, and the Chough that feed on them.

This management has already helped to spread three-lobed water crowsfoot at Cilan, another of the project sites. This rare buttercup grows in ditches and hoof-prints, where competition from other plants is minimal. The cattle are able to trample bracken and gorse, opening up the ground so that heather and other plants can establish themselves. Bruising bracken slows its growth and spread so it doesn't take over. A well-managed grazing regime should allow us to sustain the desired conditions, providing a valuable habitat, and also an economic resource.

Bringing back heather

At Bychestyn severe and regular burns have resulted in the dominance of gorse, causing a reduction and abandonment of the site for grazing. As a result, heather has almost disappeared, with only occasional purple patches being seen in late summer.

To restore heather, we have introduced an experimental heather re-seeding project to Bychestyn. This has involved combs, leaf blowers, school children and, later on, big bales made out of heather. We used combs to strip the seed-containing fruits off the old flower-spikes; we then used leaf blowers in reverse to gather up the material containing the seeds; and we used a group of schoolchildren from Ysgol Foel Gron, Mynytho, as willing volunteers. Once we had a sufficient amount (approximately 120kg) it was sent to Shrewsbury to be filtered, separating the seed from the flower heads. This was then heated and chemically treated to break the dormancy of the seeds, and returned to us in a small plastic container full of pure heather seed weighing a mere 1.86kg. This represents approximately 15 million seeds.

We prepared 11 plots by cutting the gorse down to the ground, using a chain harrow to disturb the soil, then applied the heather seeds suspended in water with a knapsack sprayer. The heather bales, collected from other sites, were then used to cover the plots with a coating of material containing seeds. We have already begun preparing the ground for re-seeding two much larger plots at Bychestyn later this year.

Threats to wildlife

Coastal and lowland heath is considered a highly threatened habitat in the UK, and the Llŷn's heathlands support an array of plants and animals, some of which are rare. Ground-nesting birds such as Skylarks, Pipits and Yellowhammers, and the Chough, which nests in nearby sea cliffs, rely on the heathland habitat. Chough depend on short grazed areas, livestock dung and anthills for a variety of invertebrates including dung beetles, which form their main food source. This means that correct

grazing patterns are crucial in creating a chough-friendly habitat.

One of Llŷn's heathlands is also the only mainland site in the UK for the spotted rock rose. This plant is an annual, and each flower is only open for a short while, typically dropping its petals after mid-day.

The golden-hair lichen is restricted to the Welsh coast and South West England and it can be seen at a number of sites on the coastal heathland around Aberdaron. This species was widespread across Great Britain and Ireland but, because of a loss of suitable habitat and its sensitivity to air pollution, it has become very scarce and confined to a handful of sites. Threats to this lichen include sulphur dioxide in the atmosphere, eutrophication, and air-borne ammonia from the application of slurry on agricultural land and other sources.

Golden-hair lichen

Restoring buildings

We are also restoring two traditional cottages, giving someone the opportunity to live an idyllic lifestyle in a picturesque location. As well as transforming these cottages and surrounding land from a state of degeneration, this project will provide opportunities for people to learn traditional skills and to experience what life would have been like more than 100 years ago.

The two cottages (Fron Deg and Tan yr Ardd) were a part of the Plas yn Rhiw estate, and according to the estate's previous owner M. Honora Keating, in her 1957 guide, the cottages were formerly inhabited by smallholders and fishermen, the roof of one of the cottages being used to dry mackerel before they were salted in barrels. The restoration work has involved the use of traditional building methods such as pegged slate roofs with oak pegs, using lime mortar with a lime-wash finish and re-using original features like the floor tiles and slates wherever possible.

Tan yr Ardd harnesses solar energy for its electricity, and uses a fuel burner to heat water, making it practically self-sufficient. Much work needs to be done on the land surrounding the cottages, including the removal of invasive species. Himalayan Balsam has become dominant over much of the eight-acre site. The reintroduction of cattle should help improve the situation, along with much work pulling the plants up by hand.

The cottages will open to the public on 23 March 2013, with a variety of walks and demonstrations planned for the day. A part of the project still in its planning phase is the restoration of hay meadows on Llŷn. This will depend on reviving traditional hay meadow management. It will link closely with the heathland restoration work, providing hay for livestock wintering on the heathland rather than using hay from high input systems, which could introduce undesirable species into the heaths. Helen Buckingham (National Trust Wildlife and Countryside Advisor) and Hilary Kehoe (PONT) will be leading on this project.

The project is Lottery funded (HLF) and led by Gwynedd County Council. The work is carried out by a number of organisations including the NT. The heathland restoration work is taking place on NT property, and the work is carried out by NT staff. The project aims to benefit the area by protecting and offering opportunities to enhance nature/habitats, tourism, heritage, and the Welsh language.

***Robert Parkinson** is the National Trust's Community Ranger for Cwrt, Henfaes and Porth Simdde.*

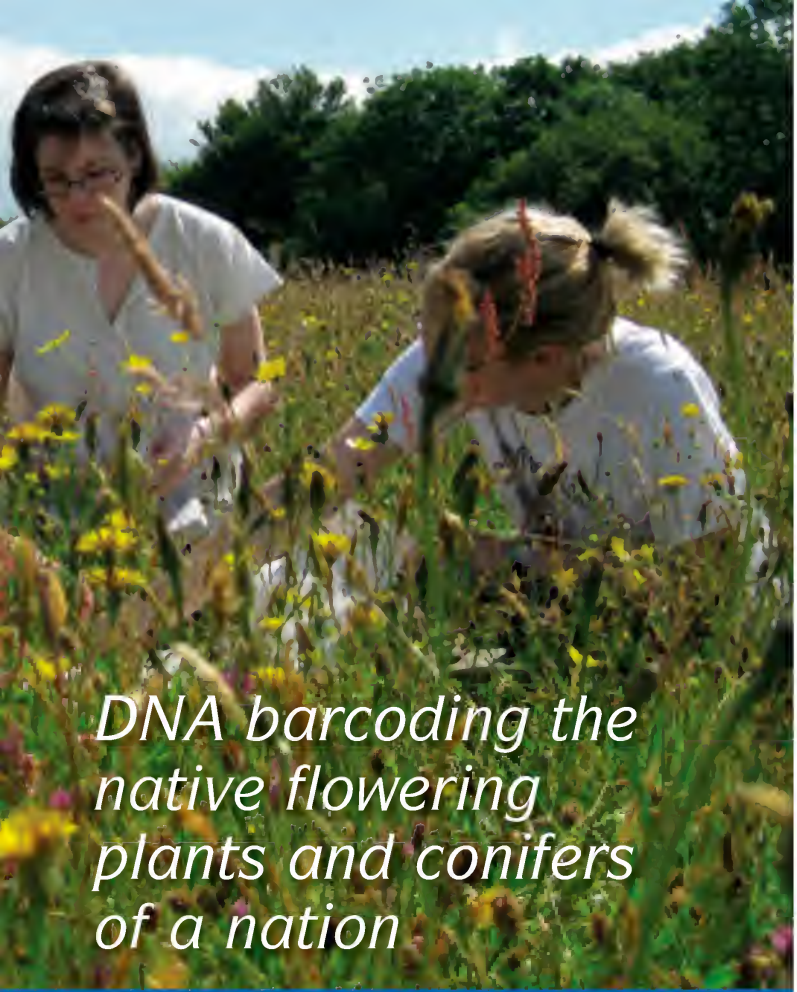
Barcode Wales

Yn gymharol ddiweddar, byddai archwilio DNA planhigion gwyllt – hyd yn oed os oedd hynny'n bosibl yn dechnegol – wedi bod fwy neu lai'n amhosibl oherwydd y gost. Ond yn sgîl prosiect arloesol, mae Gardd Fotaneg Genedlaethol Cymru a'i phartneriaid bellach wedi creu cod bar ar gyfer holl blanhigion Cymru – y wlad gyntaf erioed i wneud hyn. Yma mae NATASHA DE VERE yn disgrifio'r gwaith a wnaed hyd yn hyn (sydd wedi ymestyn y tu hwnt i blanhigion Cymru) ac yn edrych tua'r dyfodol i drafod y pethau eraill y gellir eu gwneud, o greu cod bar ar gyfer paill er mwyn gweld beth mae pryfed hofran yn bwydo arno, i astudio sut y gall mêl fod o fudd i iechyd pobl, ac ennyn diddordeb y cyhoedd a'r celfyddydau yn y maes gwyddonol newydd hwn.

Not long ago, examining the DNA of wild plants, if technically just about possible, would have been unthinkable on grounds of cost. Now, in a truly pioneering project, the National Botanic Garden of Wales and partners have barcoded the entire Welsh flora, the first country ever to have achieved this. ***NATASHA DE VERE*** *describes the work so far, which has not stopped at the Welsh flora, and looks ahead to its many applications, from barcoding pollen to find out what hoverflies are feeding on, to looking into human health aspects of honey, and engaging the public and the arts with this new field of plant science.*

The ability to identify plant species is fundamental to our understanding of the world around us. In order to conserve biodiversity we need to be able to identify and monitor species. Correct identification is also vital in order for us to use plants for food, medicine or materials. Identification generally relies on morphological examination, but this often requires specialist knowledge that is in short supply. Beyond this, it is often desirable to be able to identify plants from material where morphological approaches are difficult or impossible to use; for example, from pollen, roots, seeds, fragments or mixtures of tissue.

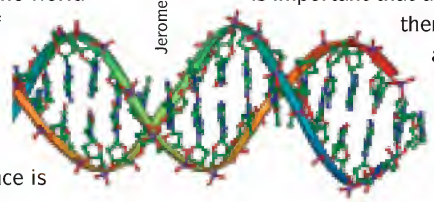
DNA bar-coding is a method for identifying species from short sections of their DNA. An important factor is to have global agreement on the regions of DNA



DNA barcoding the native flowering plants and conifers of a nation

and protocols used for different groups of living things in order to create an international resource for biodiversity conservation. For animals a short section of the mitochrondial genome, called Cox1, is used for identification; for plants two regions of the chloroplast genome, called *rbcL* and *matK*. To begin with, reference DNA libraries need to be developed using species identified by a taxonomic expert; unknown DNA sequences can then be compared to this.

There are now initiatives around the world concerned with DNA barcoding of species from all of the kingdoms of life; plants, animals, fungi and microbes. Many nations have countrywide initiatives to DNA barcode their species. Open Science is key: DNA barcodes, their associated information, and protocols for their development, should be available to everyone, from researchers and regulatory authorities to the general public.



Jerome Walke

Barcode Wales

Four years ago partners from the National Botanic Garden of Wales, National Museum Wales and Aberystwyth University embarked on an ambitious project to be the first nation in the world to DNA barcode all of their native flowering plants. Wales has 1,143 native and archaeophyte (species introduced before 1500 AD) flowering plants and conifers, found within 455 genera, 95 families and 34 orders. To create a reference database of DNA barcodes we needed to start with correctly identified source material. Project partner Dr Tim Rich from the National Museum Wales (NMW) was responsible for checking every single specimen that we DNA barcoded to ensure that it was correctly identified. We collected samples of many species from the wild but in order to build up our database quickly we concentrated on using herbarium specimens. The herbaria of the world provide an incredibly valuable resource of plant species that have been collected and verified by taxonomic experts. We used the national herbarium in Cardiff (NMW) for our samples and developed special protocols for extracting DNA from herbarium specimens to make full use of this resource.

For the resulting DNA barcodes to be of most use, it is important that along with the DNA sequence there is a full record of when, where and by whom the plant was collected. All users of the DNA barcodes need to have access to this information. We also need to DNA barcode more than

Neelix/Wikimedia Commons/Public domain

Whitebeam: one of the trickiest species to barcode

one specimen for each species, to allow for errors and any variation between individuals within a species. This variation should be low however, as the rationale behind DNA barcoding is to use regions of DNA that differ between species but which are the same within a species. For Barcode Wales we aimed to DNA barcode at least three samples for each species using the DNA barcode markers *rbcL* and *matK*.

Over the four years we collected 4,272 plant specimens, 3,637 from the herbarium and 635 freshly collected from throughout Wales. We extracted, amplified and sequenced the DNA, resulting in over 5,723 DNA barcodes, 3,304 for rbcL and 2,419 for *matK*. Of the 1,143 species of Wales we DNA barcoded 98% using *rbcL* and 90% with *rbcL* and *matK* giving us the most comprehensive coverage of DNA barcodes for any national flora in the world. Our DNA barcodes allow us to distinguish 75% of the native flowering plants of Wales from each other. Some species, such as the closely related whitebeams, share the same DNA barcode: for these trickier groups we can distinguish what genus they belong to (e.g. *Sorbus*). The creation of this DNA barcode library is reported in the open access scientific journal PLoS ONE http://dx.plos.org/10.1371/journal.pone.0037945 and all of the DNA barcodes are freely available on the Barcode of Life Database (BOLD) and DNA sequence repository GenBank.

The Barcode Wales database provides a valuable resource for researchers wanting to identify species using DNA-based approaches. Our DNA barcodes for Wales also provide a stock that can be incorporated into other projects. The 1,143 species of Wales represent 77% of the native flowering plants of the UK. We are now DNA barcoding the rest of the UK flora, working with the Royal Botanic Gardens Edinburgh. Whilst we are working on the native plants, Imperial College and the Royal Botanic Gardens Kew are DNA barcoding the non-native flowering plants.

Using DNA barcodes

The range of applications using plant DNA barcoding is as broad as our imaginations, with some great applications already being developed. Ecological applications include understanding below-ground biodiversity and identifying species by DNA barcoding roots, reconstructing past landscapes using plant remains in the soil, and identifying invasive species. DNA barcoding has been used to verify the contents of plant products including medicinal plants, olive oil, tea and kitchen spices. DNA sequences obtained for DNA barcoding have also been used to create phylogenetic trees showing how all of the plant species of an area are related to each other. At the National Botanic Garden of Wales we have started to develop applications that use our Barcode Wales resource in collaboration with a wide range of partners.

DNA barcodes and the battle against disease

PhD student Jenny Hawkins is working on a joint project between the Garden and the School of Pharmacy and Pharmaceutical Sciences at Cardiff University to DNA barcode honey for drug discovery. Honey has long been known to have antimicrobial properties and is already being used in wound dressings to fight infections. Different constituents of the honey contribute to its antimicrobial activity and the plants the bees visit to make the honey can provide phytochemicals that alter the honey's properties.

DNA extraction

Jenny has so far collected over 250 honey samples from throughout the UK and is testing their ability to kill the hospital infection MRSA. We are then DNA barcoding the honey to see if there is a link between the honey's antimicrobial activity and particular plant species the bees visited to make it. We are at the beginning of this project but the early results show that one of our honey samples produces good antimicrobial activity against MRSA and contains different plant constituents compared to less effective honeys.

DNA barcodes and the fate of pollinators

DNA barcoding may also be able to help in the crisis facing our pollinators. PhD student Andrew Lucas is working with the Garden and the Swansea Ecology Research Team (SERT) at Swansea University to investigate the role that hoverflies play in pollination. Hoverflies play a key role in pollination but we know very little about their behaviour. Andrew's research will collect hoverflies and find out where they go by DNA barcoding the pollen carried on their bodies. He is interested in how hoverflies move through the landscape and the importance of habitat quality.

Public engagement: science and art

DNA barcoding is not only a resource for scientists; it is also an excellent way to engage people with their native flora and plant sciences research. At the National Botanic Garden of Wales we are particularly interested in projects that link arts and science. We have worked with botanical artist Emma Tuck on a contemporary art exhibition and with community artist Pod Clare, on a Barcode Wales mosaic created by community groups from throughout Wales. We worked with Professor Andrea Liggins of Swansea University on a photographic exhibition combining representations of plants and their DNA barcodes. We travelled with this exhibition to Chongqing in China, giving us the opportunity to visit Chinese conservation groups and universities to describe the links between the science and art of DNA barcoding.

DNA barcoding provides a research platform that can be used for a wide range of scientific research, along with multidisciplinary research across the arts, sciences and social sciences. It provides a mechanism for training plant science students and engaging the public. The DNA barcodes generated are open access: they make a resource available to everyone.

Hoverfly *Scaeva pyrastri* on chicory flower

Pudding4brains/Wikimedia Commons/Public domain

Dr Natasha de Vere *is Head of Conservation and Research at the National Botanic Garden of Wales and a senior lecturer at the Institute of Biological, Environmental and Rural Sciences (IBERS), Aberystwyth University. She is a plant sciences researcher concentrating on the conservation and utilisation of the Welsh flora. Beyond this she is interested in the questions that scientists and artists ask about the world around them.*

Bev Lewis

Dormice
in the Dyfi Valley

Er gwaethaf eu hanwyldeb a'u poblogrwydd, pur anaml y bydd pathewod y dod i gysylltiad â phobl – yn hytrach, mae'n well ganddynt swatio o'r golwg. Yn sgil astudiaeth fanwl a oedd yn anelu at gasglu gwybodaeth am y creaduriaid, mae eu cynefinoedd a'u dosbarthiad yng nghanolbarth Cymru wedi dechrau dod i'r amlwg, ac mae'r wybodaeth a gasglwyd wedi helpu i ofalu am eu hanghenion, fel yr esbonia ROY BAMFORD.

For all their charm and popularity, dormice seldom come into contact with people, keeping themselves to themselves. In one mid-Wales valley their habits and distribution have started to come into focus as a result of careful record-gathering and painstaking study; information which has assisted in providing for their needs, as ROY BAMFORD reports.

Pathew - *Muscardinus avellanarius* - Dormouse

In west Wales the dormouse, *Muscardinus avellanarius* has a long history of under-recording. At least, that could be the conclusion when considering the relative abundance of records in recent years. Being mainly nocturnal, generally rather scarce and with little tendency to invade households, it is perhaps easier to understand how this very attractive 'mouse' has for so long 'gone under the radar', so to speak. There are few early records from Meirionydd and most of these are from the south of the county around Dolgellau and the Afon Dyfi.

More recent records come from Bill Condry: his dog found a hibernator in Cwm Einion, Ceredigion, on the south side of the estuary in the 1950s and he also recorded dormice at what was then Lapley Grange, a private school outside the village of

Furnace, where he was a teacher. They were recorded regularly here again in the 1980s, at Plas Einion Rural Studies Centre. A recent record from here is of a torpid juvenile dormouse in a woodpile in early October 2012. Other records from the Dyfi area have trickled in over the years and there were reliable reports from foresters and forest workers in the 60s and 70s. It ought to be noted that these records stem from a period when manual tasks in plantation forests were still the norm and machinery other than chainsaws, tractors and a winch were a rarity. Now many forest operations are mechanised if not abandoned altogether and hand-weeding with a sickle is certainly a thing of the past.

One of the most notable records came from Denis Goodbody, a forester who one day came across three dormice feeding on blackberries in Cwm Cadian near Pantperthog. One of the 1980s records at Plas Einion also relates to young dormice seen feeding on blackberries in broad daylight. And during some awful summer weather in 2012, a family of three resorted to feeding at our bird table for a short period, again in broad daylight. They are mainly nocturnal but certainly not exclusively so, and it would appear that juveniles in particular may be seen feeding at any time of day in late summer and autumn when they are in a race to put on fat to see them through winter hibernation. This has often been a period when what the cat brings in can be interesting. Several cat owners have widened our knowledge by emailing or phoning in that 'unfortunately the cat has caught a dormouse'. Invariably these have been juveniles and I guess they are just inexperienced dormice that are taking risks.

During the early 1980s dormice were found using tit-type bird boxes in plantation larch and beech within Rheidol Forest, near Talybont in Ceredigion. Here they occasionally took over pied flycatcher nests (after eating the eggs) but generally they built their own nests. It is worth noting that at both these sites hazel was very scarce and the understorey was equally quite sparse. It was clear that dormice were having to travel some distance to feed and were definitely not in any way dependent on hazel. In 1991 they were found during another bird nestbox study at Ceinws near Corris and in 1993 small

Bev Lewis

Seven in a bed

mammal boxes were first erected within Dyfi Forest, at Pantperthog nearby.

The involvement of Dyfi/Rheidol forestry and dormice continues to this day and there is still a steady input of information from other sources, such that quite a detailed, local bank of information has been built up. The distribution map has had to be redrawn but the map (see over) is probably more a reflection of the amount of observer input and information gathering than of any definitive distribution of dormice north and south of the Afon Dyfi. There is certainly much suitable habitat, including PAWS (Plantation on Ancient Woodland Sites) restoration and general forest clearfell and regeneration, where as yet dormice have not been recorded.

Hazel coppice has always been the traditional habitat for finding dormice. Coppicing largely went out of fashion quite early in the 20th century and along with that there seems to have been a corresponding decline in dormouse records. Manual hedge trimming and laying is also largely a thing of the past and it is nearly all now mechanized and consists of a rapid run-past with a tractor-mounted flail. Bearing in mind that this year we have found two dormouse nests in our beech hedge, just at the level they were cut (with loppers) last autumn, I wonder how many nests and dormice, not to mention multitudinous berries, fruits and insects, are destroyed each early autumn as the contractor's flail gets to work on the many roadside hedges in west Wales?

Roy Bamford

Hazel coppice at Tyn y Garth

Forestry operations can be the modern equivalent of coppicing and, while the felling coupes may be larger, the overall effects and benefits to dormice in creating areas of secondary growth and developing a complex structure of mixed species woodland are probably quite similar.

At Pantperthog, Jack Grasse has been proactive at managing an area of forestry woodland. Several thousand broadleaved saplings have been planted, old hedges freed from surrounding conifers and hazel layered. Bench felling of some conifers has allowed aerial routes for dormice to be maintained as they are reluctant to go to ground but, as with nocturnalism, this not a hard and fast rule. Experiments with high boxes found dormice in the Sitka spruce canopy, showing how adaptable they can be. Presumably up there they are taking advantage of the abundant aphid crop, as they are known to do from sycamore. Insects and insect larvae are important food sources. The awful summer weather and consequent lack of insects was almost certainly part of the reason why we saw dormice on the bird table in 2012.

At Tyn y Garth in Cwm Einion, management has consisted of coppicing birch regeneration, halo-thinning older, surviving broadleaves, a small amount of planting, and the creation of dead hedges. This last aids connection to surrounding plantation conifers by providing similar aerial routes to those of the bench felling at Pantperthog. This tidying-up of the aftermath of coppicing, but not burning it, has encouraged the ground flora and diversified the habitat in general.

At both sites over 50 mammal boxes have been monitored for many years and records are forwarded annually to Forest Research and the National Dormouse Monitoring Programme. Dormice usually appear in small numbers during spring and summer, building up to maximum numbers from September onwards: in a good year there might be into the teens found on a round of the boxes. Use of boxes fluctuates widely and in some years there may be little or no evidence of breeding. At both Pantperthog and Tyn y Garth there is an impression that as the habitat has improved (hopefully), the use of nestboxes may have declined, certainly for breeding. A natural nest (several have been found at Pantperthog and elsewhere) is a much safer option, as when disturbed any occupants can exit through the rather loosely woven walls, (*pers observation*). A nestbox has solid walls and only one entrance and exit.

Great Nut Hunt

It was 1993 when the Great Nut Hunt was initiated and as a means of identifying where dormice exist it remains the easiest and most reliable way to establish their presence. Any good mammal book will have an illustration of how a hazel nut looks after a dormouse has opened it, but in 1996 Jack Grasse went one step further and experimented on how long these nuts might last in the environment. Every three months over a five year period he examined 100 nuts left to the elements in a woodland situation to determine their rate of deterioration. A simple thumb and forefinger squeeze-test established that up to two years of age they are virtually unbreakable and that after four or five years they become increasingly easy to break. Of course such a test depends on the individual's strength and probably on their pain threshold, but it can give a useful insight as to when dormice were present at a particular site.

Where hazel is scarce or absent and hence there are few or indeed no nuts to hunt, then nest tubes are the next best, cheap and convenient monitoring option. As with traditional boxes it may take a few years before dormice use them but if dormice are present then eventually they will, if only as temporary shelters with some rudimentary nest building.

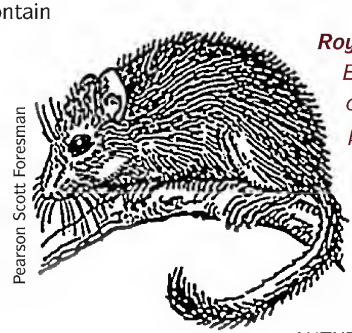
South and north of the Afon Dyfi dormice have been found from almost sea level (Cors Dyfi, Ynys Hir) to the lofty heights of 260m, at Corris Uchaf. There is so much suitable habitat available within the boundaries of the records shown here that it is inconceivable that some at least do not contain populations of dormice.

Large traditional gardens with a wide variety of flowering plants and shrubs are potential sites, particularly if connected to other gardens or woodland via hedges or even bracken slopes. Most of the records of hibernators come from gardeners with their noses close to the ground, who may find dormice tucked away in flower beds. Sometimes they are some distance from the nearest shrubs, thereby applying a further caveat to the widely held, but false, assumption that dormice are reluctant to cross open ground. On the other hand, in a cold corner of a garden in Cwm Einion, a hibernator was found almost three metres up in a juniper.

Wherever woodland has existed long term, and particularly where it has seen some freedom from grazing livestock and there is connectivity to other scrubby habitats, there is a chance that dormice survive. They are adaptable, resilient and sometimes surprising, but some of their apparent rarity is without doubt a sign of our detachment from the environment.

What is the outlook for dormice in the face of a changing climate? Unstable, warmer and wetter may not suit them or a whole range of other species. In west Wales they are at the western limit of their range and it remains to be seen what the long term effects of climate change might be.

Acknowledgement and thanks must go to the Forestry Commission for allowing access and encouraging the continued study of the dormouse populations in this area.



Pearson Scott Foresman

Roy Bamford *has lived in Cwm Einion and worked in conservation and outdoor pursuits for over 30 years. Now, between seasonal contracts for RSPB, BTO and other organisations, he works as a freelance ecologist/consultant, among other things.*

All photos: Alan Kearsley-Evans

Gower:
Wales in miniature

Mae swyn unigryw Gŵyr yn gwbl hysbys, ond nid yw'n amddiffyn yr ardal a'i llu o safleoedd cadwraeth natur rhag pwysau'r byd sydd ohoni. Yma mae ALAN KEARSLEY-EVANS yn disgrifio sut y mae ailganolbwyntio ar flaenoriaethau rheoli er mwyn adfer cynefinoedd ar raddfa tirwedd ac ailddyfu trwy brysgoedio yn adfywio safleoedd arbennig sydd dan reolaeth yr Ymddiriedolaeth Genedlaethol.

Gower's unique charms are well known, but they don't insulate the area and its many sites of high nature conservation value from modern-day pressures. ALAN KEARSLEY-EVANS describes how a refocusing of management priorities to embrace landscape-scale habitat restoration and coppice regeneration are breathing life back into special sites under National Trust management.

Uncontrolled burning at Worm's Head

The Gower peninsula has often been described as 'Wales in Miniature'. Gower is a small piece of land (14 miles long by nine miles wide) effectively made into an island by the dual conurbations of Swansea and Llanelli on the landward edge. Yet into this are squeezed habitats as diverse as salt marsh, fen, dry heath, wet heath, calcareous grassland, ancient woodland and one of the most dynamic sand dune systems in Europe.

Gower was designated as Britain's first AONB in 1956 and the National Trust owns approximately three-quarters (26 miles) of the coastline as well as farmland and common land. As spectacular and well-protected as the peninsula is, the problems that plague conservation elsewhere are sadly replicated on Gower as well.

A large percentage of National Trust-owned designated

sites are also common land. Gower has long been one of the last strongholds of common land grazing. While elsewhere in Wales commons have long since been abandoned, on Gower the culture of maintaining this ancient tradition has persisted. However, with the devastating problems of bovine TB, increased traffic on the unfenced roadsides and the continual shift away from more traditional hardy breeds, Gower's commons are becoming increasingly quiet. Nowhere is this more evident than on the south Gower coast.

The Vile field system near Rhossili

Accentuate the positive

A dramatic blend of precipitous limestone cliffs, clipped calcareous grassland and shaggy coastal heath, this coast has been shaped through mixed grazing for many hundreds of years. The gradual reduction of livestock has had the predictable outcome of an increase in coarser grasses, bracken and gorse; and, in a vain attempt by some to keep on top of the scrub, unplanned, uncontrolled fires have become the norm.

March 2012 will be fondly remembered amongst those of us lucky enough to earn our livings in the outdoors as being one of the few warm dry months of that year. It was also the month when the Gower NT team decided that something had to change with our management, as we had some of the most devastating uncontrolled burns I have had the misfortune to see. The fires crept overnight at Pennard cliffs, Rhossili Down, Overton and through most of the coastal NNR at Rhossili, the light winds allowing the fires to burn not just the vegetation but seriously scorch the soil as well.

Up to this point the management prescription had been about trying to focus on improving patches of habitat as a 'top up' to the grazing. However, the gradual decline of livestock meant that this was becoming increasingly difficult as the gorse cover increased and became dominant.

I am a strong believer that we should always try to turn a negative into a positive and so, as soon as the danger of more fires passed (it started raining again!) we set to work removing the charred remains of the gorse stems which were preventing livestock from grazing the burned areas.

Then we drew up a new management agreement with CCW which changed its focus from a detailed study of handpicked sites to a landscape-scale restoration project. The aim over five years is to bring the amount of scrub and coarser vegetation back to the level it would have been at with higher grazing pressure. This increase in mechanical removal of vegetation comes at a price

New coppicing

but we are very fortunate that we have been able to negotiate new S15 agreements with CCW which help to support this.

In addition to the new management agreements we were also successful in obtaining a grant from the ERDF eco-resilience fund, which enabled us to purchase a Ryetec cut and collect flail mower. On some of the more seriously degenerated sites the areas highlighted as being of particular importance to wildlife are nestled in pockets on the coast behind impenetrable gorse stands. The Ryetec mower allows us to open up larger areas for access and to encourage resurgence in grazing to prevent the areas from scrubbing over again.

Bishopston

Elsewhere on Gower, in Bishopston valley a completely different management issue is being tackled, again with the support of our local CCW team. This steep-sided valley contains ancient ash woodland, limestone Karst scenery, greater and lesser horseshoe bats and a spectacular assemblage of bryophytes and liverworts. Although on first inspection this valley couldn't be more different from the south Gower coast, its current appearance is due to a decline and then collapse in the grazing of this common.

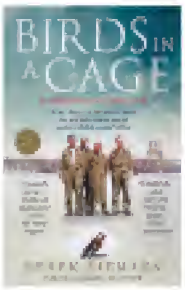
The ash woodland is a SSSI and is part of a greater Gower ash woodlands SAC, but the valley also supports large stands of degenerate hazel coppice. The coppice would have been managed to provide fuel and materials for the local community and commoners at a time when the valley was a far busier place: the valley was once home to quarries and mines, and gave access to a once-busy sheltered bay. As the grazing declined so did the upkeep of the coppice, to the point where the trees all became even-aged and the habitat diversity went into decline.

Dormice are present in other Gower ash/hazel woodlands and in 2012, in partnership with Environment Wales, we started a community dormouse project to improve the habitat for these little creatures. The project struck a chord locally. As a result the local Swansea council conservation team took the project into schools and to community groups. CCW have agreed to support the coppice regeneration in conjunction with the SAC management plan for a further five years and finally life is being breathed back into the valley.

Alan Kearsley-Evans *is National Trust Head Ranger for Gower.*

Coastal heath

Green **Bookshelf**



Birds in a Cage
Derek Niemann
Short Books in association with the RSPB
2012
312 pages
£20

A most appropriate title for Derek Niemann's book concerning four British prisoners of war in Germany during the Second World War. Four men, who subsequently became leaders and inspirers in wildlife conservation, three with strong links with Wales, and all of whom I had the pleasure of knowing, though well after their wartime experiences.

First to be captured was John Buxton in Norway, May 1940, where he served with 1st Independent Company (later 1st Commandos). Buxton had been a visitor to Skokholm before the war and acted as warden during the summer of 1939. He returned to help warden Skomer in 1946, and co-authored *Island of Skomer* (1950) with his brother-in-law Ronald Lockley.

Peter Conder, warden of Skokholm from 1947 until April 1954, was captured at St-Valery-en-Caux in June 1940 while serving with the Royal Signals. He subsequently joined the infant Royal Society for the Protection of Birds, becoming Director in 1963. By his retirement thirteen years later he had laid the foundations for one of the world's leading nature conservation organisations. As a member of the Junior Bird Recorders Club, then the young wing of the RSPB, I was inspired in 1955 about the Pembrokeshire islands by a talk he gave concerning Skokholm: five years later I was to live on nearby Skomer.

George Waterston of the Royal Artillery, captured in Crete, was later the RSPB's pioneering Scottish officer. The successful return of the Osprey and the establishment of Fair Isle as a Bird Observatory were just two of many accomplishments.

Last to be captured, RAF pilot John Barrett, shot down in September 1941, was for a period in the same prisoner of war camp as Buxton, Conder and Waterston. In 1947 he was appointed warden of the newly established field centre at Dale Fort, also having responsibility for Skokholm Bird Observatory and so linking up once more with Conder. Writing in the Bird Report for 1968 he described, during his many crossings to the island, 'seeing a freak wave (very frightening), a school of killer whales (very powerful) and a shearwater so rare that nobody would believe me (very properly)'. He then went on to pioneer the guided walks and talks programme of the Pembrokeshire Coast National Park, a model now emulated world-wide.

Although Barrett and Conder tried unsuccessfully to escape and Barrett vaulted over the wooden horse in the famous escape of that name, all four were to find, during the years of confinement, much comfort in observing birds. Birds on migration, and birds nesting in or visiting the compounds were observed and recorded, and thus helped bring a purpose and sense of dignity to all four. An unusual, but extremely inspirational and well illustrated story, of four men with a very special bond between them.

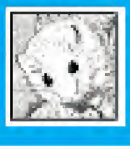
Islands Beyond the Horizon
Roger Lovegrove
Oxford University Press 2012
228 pages
£16.99

The author will be well known to many readers; for 27 years he was the RSPB's first Director for Wales, a co-founder of the Montgomeryshire Wildlife Trust and since retirement has served on the board of the Countryside Council for Wales and other bodies. He is joint author of *Birds in Wales* while his other titles include *The Red Kite's Tale*.

What finer way for the author to have commenced his island visiting life than, when aged sixteen, for his parents to have sent him to spend a week on Skokholm. They knew of his interest in birds and other wildlife but this visit was beyond his dreams. So in 1951, after what seemed an everlasting train journey from his home close to the Scottish borders, he reached his first island. Peter Conder, later Director of the RSPB, was then warden.

Despite the author's subsequent career in Wales and his enduring links with the Pembrokeshire islands this book had its genesis as he watched Arctic Skuas on St Kilda, and tells of his visits to 20 of the most distant of the world's islands: islands as diverse as Great Skellig and South Georgia, Guam and Jan Mayen. If you are not already an island addict read this absorbing book and then hurry off to Skokholm. Who knows where that will lead you next.

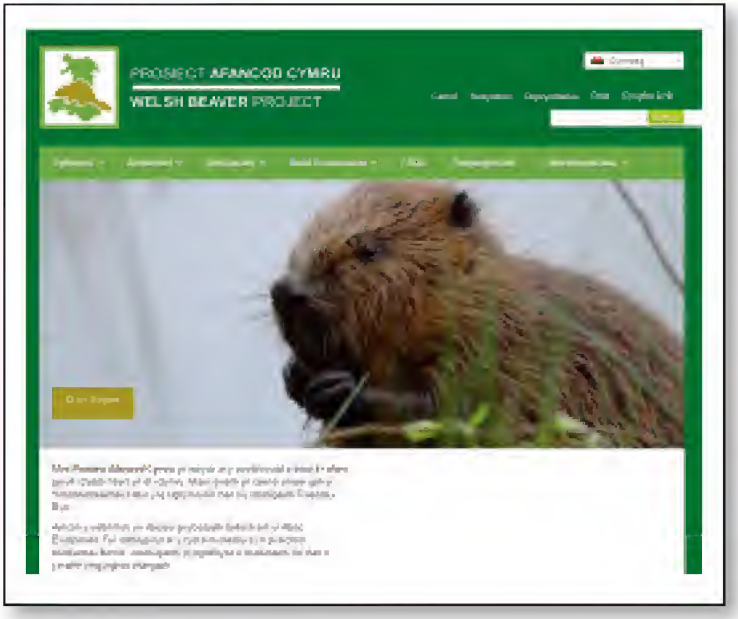
David Saunders



Mammal news

The most exciting mammal news must surely be that a dead **pine marten** has been found near Newtown, Powys, the first carcass reported in Wales since 1971, providing important evidence that this fascinating mammal still exists in Wales. The carcass was found on the roadside close to the village of Aberhafesp by a local resident. It adds to evidence supporting the long-held view of mammal experts that this attractive tree-dwelling animal does exist in Wales, but in such low numbers that very few people ever see one. DNA analysis carried out at the Waterford Institute of Technology in the Republic of Ireland has provided unequivocal evidence that the animal was a young male pine marten native to the British Isles. This will renew efforts by mammal surveyors to find further evidence across Wales, such as initial plans for a camera trapping survey in the forests of North Wales this winter.

And almost as exciting, Sam Dyer has confirmed breeding **serotine bats** in north Wales this summer for first time. In April he radio-tracked two female serotines for 15 days until the transmitters' batteries died. He established the location of a maternity roost and several other important roost sites including cliff roosting locations, the first time this has been recorded in the UK. In June he undertook genetic and stable isotope sampling of serotines, leading to a serotine count far higher than predicted with at least 76 bats present, potentially making this roost approximately the 5th biggest in the UK and some 100km north of any other confirmed UK serotine roost. In August three female serotines were radio-tracked for 18 days until the transmitters' batteries died (or were groomed off). He managed to collect a large amount of data about commuting routes, foraging areas, roosting sites and behaviour, and hopes to explore the true distribution of this species across north Wales over the coming year. Good luck Sam!



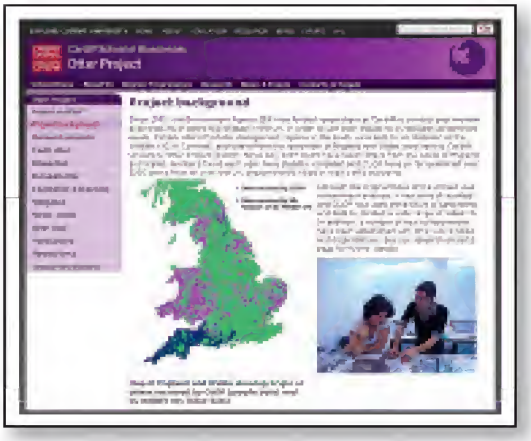
The next stage of the **Welsh Beaver Project** is now underway following the publication of the project report on 19th July, which includes information about beavers and the benefits they can bring, as well as how they could be reintroduced and managed. Six catchments have been outlined as potential release sites in Wales, and other sites are currently being investigated. The widespread consultation continues and Adrian Lloyd-Jones of Wildlife Trusts Wales, leading the project, has been talking to those with an interest in beaver reintroduction, including angling and farming organisations, river trusts, conservation bodies and politicians. Welcome help and support have also been secured from the Wildwood Trust in Kent, who are experts in beaver reintroduction.

For more information about beavers and their reintroduction to Wales, download the reports, and to give the project feedback please visit the website at **www.welshbeaverproject.org**, or follow them on Twitter (**@beaver-afanc)** and send in your tweets!

Almost 100 people attended the Wales **Dormouse** Workers' Day on 17th November in Aberystwyth. The conference, organised by the Mammals in a Sustainable Environment (MISE) project, was held to raise awareness of dormice in Wales. Delegates listened to

speakers from Wales, England and Ireland talking on subjects ranging from dormouse monitoring to woodland management. One highlight was a talk by national dormouse expert Pat Morris who spoke about the building of wildlife bridges to allow dormice and other mammals to cross roads. The day was aimed at anyone with an interest in dormice and to provide a forum for discussion on what is currently known about the dormouse in Wales and what more needs to be done to monitor and conserve this charismatic animal. With the help of volunteers, surveys are being carried out across Wales where dormice may be under-recorded. The project is identifying areas where conservation management can be targeted to reverse habitat fragmentation and help the recovery of this species. If you are interested in taking part in a dormouse survey, or if you know of an area where dormice can be found, please contact Ceri Morris **c.morris@ccw.gov.uk** tel: 07881850735 or Jenny MacPherson 07584415760 **jennymacpherson@vwt.org.uk** .

Across Wales, Wildlife Trust Dormouse projects continue to gather evidence. In Flintshire numbers of dormice over the last few years have been extremely low; in some sites the only evidence that dormice are still present is a single fresh nest found in a box. In Denbighshire numbers are continuing to do well and North Wales Wildlife Trust was delighted with a new dormouse record in their Coed Cilygroeslwyd nature reserve, and has plans to erect boxes early next spring. Wildlife Trust of South and West Wales has recently found dormice in their Cwm Clettwr nature reserve in north Ceredigion. Fifty boxes were put up earlier in the year as part of the MISE project, after there was a suspected sighting and chewed nuts were found. On the last box check of the year two dormice were found in one of the boxes, plus some nests in other boxes. In Brecknock, there has been quite a drop in dormice numbers in Crychan and Halfway, compared to high numbers in the summers of 2010 and 2011. Perhaps the mild winter allowed more wood mice to survive and compete with dormice, or perhaps the wet summer was a problem. On the plus side, Brecknock Wildlife Trust found one box with eight dormice in one month and seven the next.



Steve Roberts had his rewards for getting up early one July morning and visiting Cemlyn Wildlife Trust nature reserve on Anglesey – a good view of an **otter**; while in June Mari Owen reported one on the beach at Aberdesach. Sadly, in July a dead dog otter was found on Anglesey on the A4080 Llanfairpwll-Brynsiencyn road by Jane Rees, the second found on that stretch of road in 10 years. Jane passed her record to the Cardiff University Otter Project, which collects carcasses primarily to analyse contaminant levels. If you find a dead otter, please telephone 03708 506506 (Environment Agency) and ask for your nearest conservation / biodiversity officer. You will be asked for the location of the otter and some other basic information. More info at **www.otterproject.cf.ac.uk/project_background.html**

***Frances Cattanach** is Director, North Wales Wildlife Trust*

Bele *Martes martes* Pine marten
Ystlum adain-lydan *Eptesicus serotinus* Serotine bat
Afanc *Castor fiber* Beaver
Pathew *Muscardinus avellanarius* Dormouse
Dyfrgi *Lutra lutra* Otter
Dadansoddiad DNA DNA analysis
Ymddiriedolaeth Bywyd Gwyllt Brycheiniog Brecknock Wildlife Trust
Ymddiriedolaeth Bywyd Gwyllt Gogledd Cymru North Wales Wildlife Trust
Ymddiriedolaethau Bywyd Gwyllt Cymru Wildlife Trusts Wales

Managing marshy grassland on Waun Las National Nature Reserve

Waun las National Nature Reserve has a lot of marshy grassland, 30 hectares if added together. Not particularly surprising considering we do get a steady supply of rain (perhaps an understatement this last year). However, the rainfall alone is not enough to create these wetland habitats. If we overlay a vegetation map over a soil map of the whole NNR, we find a clear relationship between soils described as stagnogleys and where we find areas of marshy habitats. This was a new word to me, not being a soil scientist, so after some quick research (guess how?) I discovered stagnogleyic soils have a slowly permeable subsoil i.e. are badly drained, but they will dry out occasionally given appropriate conditions. After managing the NNR for 12 years this was nothing new – except the drying out bit.

If managed carefully these habitats contain some very attractive flowering plants and are certainly important for invertebrates and birds, with huge numbers of snipe overwintering where we have clumpy growth of rushes and grasses. An extensive display of Whorled Caraway *Carum verticillatum* can look magnificent, like a freak snowfall in the middle of summer. My other favourite marsh-loving plants must include the Marsh Cinquefoil *Potentilla palustris* with a gorgeous purple-maroon flower, and Water Mint with its heady smell when crushed. Well worth the walk and the odd insect bite.

The latest project on the NNR has been to improve our management of Purple Moor Grass and rush pasture or Rhos pasture. There is a very threatened variation of this Rhos pasture where the Purple Moor Grass *Molinia caerulea* is found together with Meadow Thistle *Cirsium dissectum*. We only have a small area of this habitat, 300m^2, which was transplanted here from a local school's playing field. It is of high quality and our management will be to encourage its spread over a much greater area. Prior to this transplantation we only had two small colonies of Meadow Thistle on the whole of the NNR, it being difficult to manage these sites without sufficient infrastructure and numbers of the right type of livestock.

The main aim of the project is to keep in check the vigorous competitive plants and to prevent tree encroachment to allow for a more mixed diversity of plants. Grazing by cattle is definitely the best option. Timing is also important: traditionally this would have been late summer when other pastures were shut up for conservation for winter fodder.

We have been building up our Welsh Black cattle herd over the last five years so we now have the right number of animals to graze the site. The infrastructure to enable the grazing of the marshy areas is being installed this year with thanks to a grant from WREN. The grant has been used to achieve the ideal grazing we need by fencing the marshy areas separately into large blocks and providing water troughs in each block so the cattle can have clean drinking water at all times.

Insufficient grazing on one site had resulted in a build up of rank vegetation and encroachment by willows and alder. The grant paid for a specialist contractor to clear this vegetation and take away the arisings. The contractors, A J Butler, brought in a very heavy flail, with collection box, on a specialist tracked tractor. The wide tracks made for very low ground pressure and so minimal compaction of the soil and damage to plant growing points. The Purple Moor Grass was cut very hard so the new growth will be more palatable to the livestock. At last we are moving in the right direction, with many thanks to WREN.

Tim Bevan, The National Botanic Garden of Wales

WREN, a not-for-profit business that awards grants generated by landfill tax from sites owned by FCC Environment, granted the project £26,392. Peter Cox, managing director, said: "WREN and FCC Environment are committed to supporting projects which will help the UK meet government targets to improve and increase biodiversity. We're delighted that projects such as this continue to apply for funding for work which will have an impact on these targets."

Islands round-up

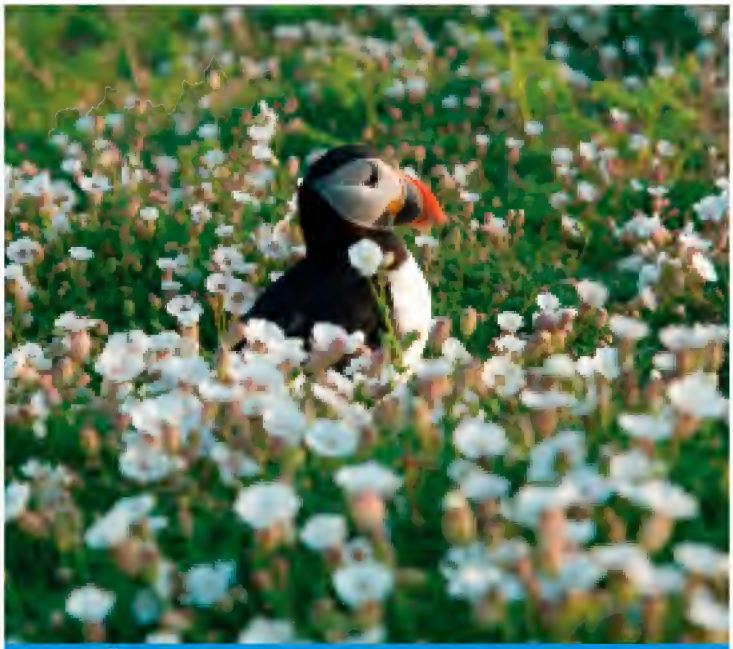
Skomer Puffins – where do they go in winter?

Thousands of people visit Skomer in the breeding season to get point-blank views of puffins. The adults leave in August, and until recently their whereabouts in winter was unknown – unlike Manx shearwaters there were no ringing recoveries and it was thought they just went 'out into the Atlantic'. Since 2007, researchers on Skomer have tracked puffins fitted with geolocators; the stored data are recovered when the birds are netted as they return to their burrows the following year. At first most birds migrate away from the colony, most in a north west to west direction, some as far as Greenland, others more locally, whilst some move southwards towards France, including the Bay of Biscay. In autumn they move into the North Atlantic, and then later in the winter they move southwards, some as far as the Mediterranean, before returning to Skomer. For a full account, read the paper by Guilford *et al*. in PLoS ONE Vol 6 e21336 **www.plosone.org**

Chris Perrins told us about a similar study on Manx shearwaters (which go to Brazil for the winter) in *Natur Cymru* 30, and John Clark described how GPS tags revealed the local movements of Bardsey's razorbills and kittiwakes in *Natur Cymru* 41. These new tracking devices have revealed reams of important information about these seabirds, which previously was just unobtainable.

Staff movements

It's almost all change on the Pembrokeshire islands at present.



Skomer Puffin

Chris Taylor left Skomer at the end of the season, and Jerry Gillham has migrated from Skokholm to Bird Island, next door to South Georgia, where he will be monitoring albatrosses. The new Skokholm wardens are Richard Brown, Assistant Warden at Bardsey Bird and Field Observatory for the last five years, and his partner Giselle Eagle; they are actually job-sharing so maybe I should have put Giselle first! Richard is a fully-qualified bird ringer, so will be keen to work on the reinstatement of Skokholm as a Bird Observatory.

However, some island staff are staying put: Steve and Emma Stansfield at Bardsey Observatory (Steve arrived in 1998!) and Lisa and Greg Morgan on Ramsey Island (RSPB). We were delighted that Lisa provided us with an excellent account of Ramsey in *Natur Cymru* 44.

Skokholm gets SIX Dream Island programmes!

We mentioned the appeal to buy the lighthouse in an earlier number. The whole recent (and not so recent) history of the island got great coverage in six ITV programmes last year, presented by Trevor Fishlock. These even featured a young Ronald Lockley (played by an actor), with some of the island volunteers playing other parts. We saw the Wildlife Trust staff meeting Trinity House to discuss the lighthouse purchase, and the keys being handed over in May. Other programmes covered the volunteers rebuilding the accommodation, and the island's rabbits, seabirds and seals. The entire series is available as a DVD from the S&W Wales Wildlife Trust for £10.99 plus postage, call 01656 724100.

Geoff Gibbs

A newcomer weaves its web among the saplings

Since January 2008 the Welsh Government has planted a native tree for every child born or adopted in Wales. The aim of the PLANT! project, which is being delivered by FCW and the Woodland Trust, is to build a stronger connection between people and their environment and to improve native habitats. But what of the six sites where the trees have been planted? What sort of habitat do they provide for wildlife? ***Michael Kilner*** *is the voluntary warden at Cefn Ila near Usk, one of these sites, which is in the care of the Woodland Trust (Coed Cadw). He has a special link to the new wood and here he explains how it is developing and tells of a very special discovery he was able to make.*

I am the voluntary warden for Coed Cefn Ila, a Woodland Trust nature reserve near Usk, Monmouthshire. The site was purchased about 5-6 years ago by the Woodland Trust, as improved agricultural land, but has been extensively planted with native broadleaf species. It also includes a pinetum, and an ancient orchard. These two areas apart, the oldest trees are no more than five years old, so the site is currently unmanaged grassland with saplings.

If you look at the Cefn Ila site on google maps, all that is visible is ploughed earth. No grass, one solitary oak, and the pinetum. When I first came to Cefn Ila in October 2011, a few years after the Woodland Trust/Coed Cadw started work there, it was a largely unmanaged grassland, into which a mix of tree species had been planted. Now those small saplings are starting to develop into young trees, and the site has been transformed into a wonderful mosaic of young woodland and grassland habitats. Almost every native tree species capable of growing in the soil at Cefn Ila has been planted, from oaks and hazel, to guelder rose and wild service trees. The variety of species provides food and shelter for birds, invertebrates and mammals. Fox, badger and deer are all present, and short-eared owl has been observed taking advantage of the vole population. Barn and tawny owls have been seen, as have goshawk and peregrine falcons.

For invertebrates, this site has proven to be excellent for orthoptera, with Common Green Grasshopper, Field Grasshopper, Short-winged and Long-winged Coneheads (types of crickets), Dark Bush Cricket, and most notably of all, Roesel's Bush Cricket *Metrioptera roeselii*. Specimens taken in 2012 have been confirmed as just the third county record of Roesel's Bush Cricket, which has only been found a few times in Wales as a whole.

My particular passion is spiders, and the diverse habitat mix means an abundance of different species, from wolf spiders and jumping spiders, to crab spiders and an excellent mix of orb-weaving species. I was fortunate to discover the first breeding population of Wasp spider, *Argiope bruennichi*, at Cefn Ila in September 2012. Species surveys are ongoing, and the species list is expected to grow with time.

A preliminary survey of the orchard found 53 fruit trees, an almost equal mix of apples and pears, with at least six apple varieties present. A single plum tree is also present but I have not seen it flower. Numerous cherry trees provide food for birds in the summer. It is hoped that the rare Noble Chafer Beetle will be found in the orchard in the coming years.

I have a close emotional attachment to Cefn Ila reserve, as I was born on what is now part of the reserve. The small cottage maternity hospital burned down a few years later and little is left. Nonetheless I fell in love with the peace and tranquility of the place as soon as I discovered it, and the *PLANT!* scheme gave me a link to the next generation. I was delighted to meet a young couple from Maesteg who had driven more than 60 miles to visit the reserve with their young daughter because they had received a *PLANT!* certificate when she was born. They brought her to see the reserve as soon as she was old enough for the walk. Although it is still early in the development of Cefn Ila as a nature reserve, it will be fascinating to see the changes as the woodland grows and matures, and it is inspiring to realise that that little girl will see the reserve long after I have moved on.

Michael Kilner *was born at Cefn Ila in 1969. He obtained a degree in Biological Sciences and a Masters in Ecology at Plymouth University and returned to Gwent in 1994/5 to become county recorder for arachnids for most of south-east Wales.*

Llais y Goedwig Gathering 19-20 April 2013
A Celebration of Welsh Community Woodland Work

This April members from the 140-strong Llais y Goedwig Community Woodland network will gather with leading environmental organisations and the public to celebrate the growing success of Welsh community woodland work, with two days of lively debate, talks, interactive demos and adventure in the heart of the woods, including horse-logging and green woodworking. There will also be the formal launch of the manifesto for community woodlands in Wales. The focus is on putting 'community' into woodland – in a very practical sense!

Community woodlands are a growing movement. They start with local groups coming together to enjoy and care for their local woods, using them for recreation, for timber use, for wildlife, or simply to keep tidy and free from rubbish. There are enough such groups out there to form a national body linking them together – Llais y Goedwig, Community Woodlands in Wales. It is a grassroots member organisation, open to any community woodland groups in Wales to join.

New groups

Llais y Goedwig has produced a number of publications covering key points to help groups start up. These include getting to know your local community, getting to know the woodland and what grows there, and developing woodland management plans. The short guides are augmented by case-study experiences of different local groups, with details of how they came about, the opportunities taken and the challenges faced.

***David Williams**, member of Blaen Bran Community woodlands in Cwmbran, Torfaen, hosts of this year's Gathering. Full details of the gathering and Llais y Goedwig publications are available at llaisy-goedwig.org.uk*

The Glass Jellyfish

The second half of the 19th century was a time of great scientific discovery. New museums were opening to the public with their galleries displaying plants and animals from across the globe. For many groups of animals this was easily done. Birds, mammals, reptiles and even fish could be skinned and mounted to produce lifelike representations.

But what about soft-bodied animals, such as jellyfish and sea anemones, which were preserved in spirit? Their colours quickly faded and their shapes became distorted. The German glass-worker and naturalist Leopold Blaschka devised a solution to this problem. Together with his son, Rudolf, he established a successful business supplying glass models, mostly of marine animals, to museums worldwide during the latter half of the 19th century.

Initially the Blaschkas relied on illustrations in books as sources of reference for the glass animals, and many of the models are three dimensional representations of animals that they never saw in reality. However, in later years they increasingly based the models on their own observations of real animals, either during field trips or from live specimens in specially built aquariums in their house. This development in their naturalist skills is seen in the models as they became increasingly scientifically accurate.

Amgueddfa Cymru has an extensive collection of these models representing a wide range of sea creatures such as sea slugs, sea cucumbers, marine worms and sea anemones. The collection was acquired in two batches. One hundred and thirty eight models were purchased from the Blaschkas by the old Cardiff City Museum in 1890. A further sixty two models came to the museum in 1927 from the Science Museum in South Kensington, London. Today Amgueddfa Cymru still has 160 of these models surviving in the museum's collections, some of which are still actively used as part of the Natural History displays.

Aurelia aurita Moon jellyfish

Of these the jellyfish are considered amongst the finest pieces of the Blaschkas' work, particularly the Portuguese Man o'war (*Physalia physalis*) which is a profusion of fine glass pieces brought together to bring life and colour to this exquisite siphonophore.

Physalia physalis Portuguese Man o'war

Other species of jellyfish common to our Welsh shores can also be found in the collection, including the commonly seen Moon jellyfish (*Aurelia aurita*), the Barrel jellyfish (*Rhizostoma pulmo*) and the Compass jellyfish (*Chryaora hysoscella*). A number of these are now on permanent display and we welcome the reader to come and explore these beautiful and historic models.

Chrysaora hysoscella Compass jellyfish

Plurobrachia Rhododactyla Sea gooseberry

Photos: Amgueddfa Cymru-national Museum Wales

Rhizostoma pulmo Barrel jellyfish

Further information on the museum's Blaschka glass model collection can also be found online at **http://www.museumwales.ac.uk/en/rhagor/galleries/blaschka/**

Julian Carter *is the Senior Natural History Conservation Officer, based in the Department of Biodiversity & Systematic Biology, Amgueddfa Cymru-National Museum Wales.*

Linking Museum Collections

Natural science collections across Wales are at real risk of deterioration as there are now no subject specialists working in museums outside of National Museum Wales. They would benefit greatly from a strategic nationwide approach in the context of Wales' discussions on a Distributed National Collection.

In 2010 the Welsh Government launched the first Museums Strategy for Wales, which offers realistic actions that museums can take to improve services and to demonstrate the benefits of museums to society as a whole, particularly in difficult times. The new Linking Natural Science Collections project will help deliver the aims of the Strategy. Funded by the Esmée Fairbairn Collections Fund, it started as a partnership between the National Museum, CyMAL and the Federation of Museums and Galleries in Wales in January 2013. It aims to make these collections more accessible with a range of opportunities for audiences to engage with and explore them.

Museum collections are a starting point for increasing understanding of issues relating to the natural world. These collections include some real jewels, such as a King Penguin from the Shackleton expedition, an early Neolithic bone flute, a 19th century turnspit dog and a 34-drawer wooden specimen chest packed with uncatalogued material. These collections will be reviewed by curators from the National Museum, who will also employ their expertise to offer advice on the care and conservation of collections.

The project will lead to a better public understanding of natural science collections and ensure their long-term future. In the initial stages, an audit of natural science objects and collections will be undertaken across Welsh museums. The results of the collections review will be made available publicly in easily accessible form via an online catalogue: this will enable anyone to locate particular collections or objects, for example from their local area. The project, which includes training for curators, will conclude with a touring exhibition of spectacular or significant natural science objects from across Wales.

If you have a natural sciences collection or are interested in knowing more about this project please contact me at the National Museum, Cardiff.

***Christian Baars**, Project Manager 'Linking Natural Science Collections in Wales'*

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Bird Identification	13-04-13
Understanding Amphibians	20-04-13
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Further Plant Identification	28-04-13
Wildlife Digital Photography	18-05-13
Diversity of Invertebrates in W. Wales	25-05-13
Understanding British Mammals 1	22-06-13
Centre for Alternative Technology, Machynlleth	
Introduction to Permaculture	22-03-13
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Art Competition Inspired by Nature

It's never too late to be inspired!
Our Art Competition runs until midnight on April 30th, so you still have plenty of time to submit your entries. Nature and wildlife is burgeoning all around us yet again as spring gets underway – what better time to be inspired by the beauty of Wales?

Here's a reminder:
We are looking for a striking front cover for *Natur Cymru*. The art must be relevant to Wales (no tigers!) and feature wildlife in a natural setting – animal, plant or anything in between.

For full details of how to enter please visit **www.naturcymru.org.uk** or call us on **01248 387373** and we will post details to you.

The competition is open to anyone and is free to subscribers. Entries must be submitted electronically – **do not send original artwork**.

Good luck, and please pass this on to your arty friends!

Dydy hi byth yn rhy hwyr ichi gael eich ysbrydoli!
Bydd ein Cystadleuaeth Gelf ar agor tan hanner nos ar 30 Ebrill, felly mae gennych ddigon o amser ar ôl i gystadlu. Mae natur a bywyd gwyllt yn blaguro o'n cwmpas ym mhobman eto'r gwanwyn hwn – pa gyfle gwell i gael eich ysbrydoli gan harddwch Cymru?

Gair i gall:
Rydym yn chwilio am glawr trawiadol ar gyfer *Natur Cymru*. Rhaid i'r gwaith celf fod yn berthnasol i Gymru (dim teigrod!) a rhaid iddo ddangos bywyd gwyllt mewn cyd-destun naturiol – anifail, planhigyn neu unrhyw beth yn y canol.

I gael **manylion llawn am sut i gystadlu**, edrychwch ar www.naturcymru.org.uk neu ffoniwch ni ar **01248 387373** ac yna mi wnawn ni bostio'r manylion atoch.

Gall pawb gymryd rhan yn y gystadleuaeth, ac mae'n rhad ac am ddim i danysgrifwyr. Rhaid cyflwyno'r gwaith yn electronig – **peidiwch ag anfon gwaith celf gwreiddiol**.

Pob lwc! A chofiwch roi'r manylion i unrhyw gyfaill creadigol sydd gennych!

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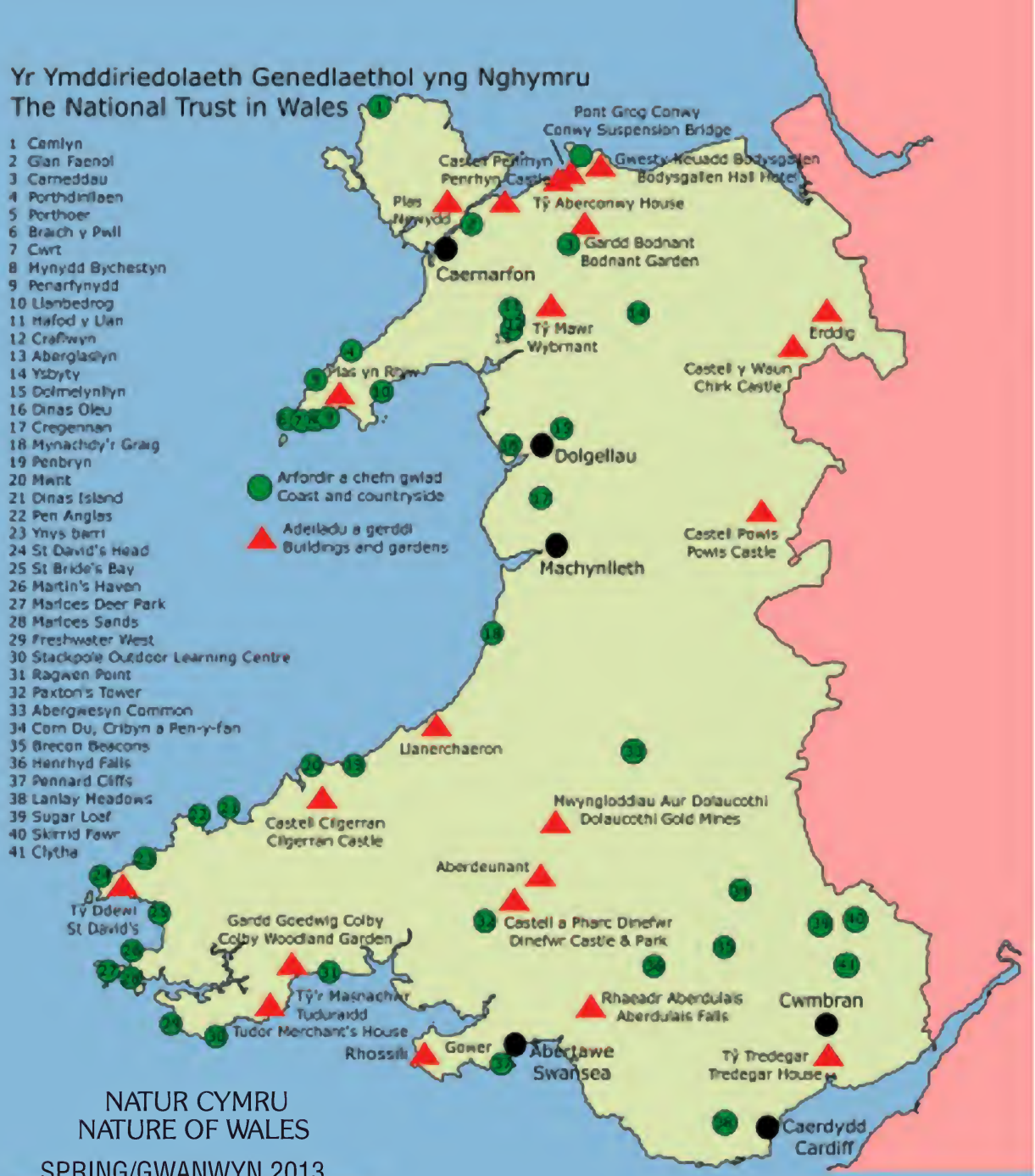

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